NON-STRATEGIC NUCLEAR TARGETING IN A NON-NUCLEAR ARMY

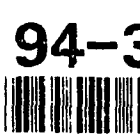
A thesis presented to the Faculty of the U.S. Army Command and General Staff College in partial fulfillment of the requirements for the degree

MASTER OF MILITARY ART AND SCIENCE

by

MICHAEL E. DONOVAN, MAJ, USA
B.S., United States Military Academy, West Point, New York, 1981
M.S., Massachusetts Institute of Technology, Cambridge, Massachusetts, 1990

Fort Leavenworth, Kansas
1994



3 June 1994 Master's Thesis, 2 Aug 93-3 Jun 94

Non-Strategic Nuclear Training in a
Non-Nuclear Army

MAJ Michael E. Donovan, USA

U.S. Army Command and General Staff College
ATTN: ATZL-SWD-GD
Fort Leavenworth, Kansas 66027-6900

Approved for public release, distribution is unlimited.

This study investigates the ability of a U.S. Army corps staff to nominate appropriate non-strategic nuclear targets. The staff is investigated as to its manning, training, and equipment to nominate targets for Air Force and Navy delivered nuclear weapons that the Corps could exploit to accomplish operational objectives. All levels of joint and service specific doctrine are examined along with limited non-governmental resources to determine corps staff requirements and desirable corps staff qualities. The structure, training, and equipment of a corps staff are then examined to determine what each staff ce_l can contribute to nuclear planning. Finally, the staff is assessed as to its ability to meet the requirements determined earlier in the study. The study finds the corps staff to be marginally manned, trained, and equipped for non-strategic nuclear target nomination. The basic structure and operational capabilities of the staff are found to be sound. The principal deficiencies are found to be inadequate nuclear training throughout the officer education system and an unsatisfactory vision for nuclear operations in principal doctrinal manuals, such as FM 100-5. These leave the corps staff ill prepared to plan or execute operations that exploit nuclear effects.

Nuclear Targeting, Nonstrategic Nuclear Weapons, Nonstrategic Nuclear Forces, Nuclear Weapons, Tactical Nuclear Weapons, Army Corps 127

UNCLASSIFIED UNCLASSIFIED UNCLASSIFIED

NON-STRATEGIC NUCLEAR TARGETING IN A NON-NUCLEAR ARMY

A thesis presented to the Faculty of the U.S. Army Command and General Staff College in partial fulfillment of the requirements for the degree

MASTER OF MILITARY ART AND SCIENCE

by

MICHAEL E. DONOVAN, MAJ, USA
B.S., United States Military Academy, West Point, New York, 1981
M.S., Massachusetts Institute of Technology, Cambridge, Massachusetts, 1990

Fort Leavenworth, Kansas
1994

MASTER OF MILITARY ARTS AND SCIENCE

THESIS APPROVAL PAGE

Name of Candidate: MAJ Michael E. Donovan

Thesis Title: Non-Strategic Nuclear Targeting in a Non-Nuclear Army

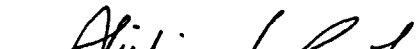
Approved by:

Richard H. Wright, M.A., Thesis Committee Chairman

David E. Turek, B.A., Member

COL Jerry W. Warner, Ph.D., Member, Consulting Faculty

Accepted this 3rd day of June 1994 by:



Philip J. Brookes, Ph.D., Director, Graduate Degree Programs

The opinions and conclusions expressed herein are those of the student author and do not necessarily represent the views of the U.S. Army Command and General Staff College or any other governmental agency. (References to this study should include the foregoing statement.)

ABSTRACT

NON-STRATEGIC NUCLEAR TARGETING IN A NON-NUCLEAR ARMY
by MAJ Michael E. Donovan, USA, 127 pages.

This study investigates the ability of a U.S. Army corps staff to nominate appropriate non-strategic nuclear targets. The staff is investigated as to its manning, training, and equipment to nominate targets for Air Force and Navy delivered nuclear weapons that the corps could exploit to accomplish operational objectives.

All levels of joint and service specific doctrine are examined along with limited non-governmental resources to determine corps staff requirements and desirable corps staff qualities. The structure, training, and equipment of a corps staff are then examined to determine what each staff cell can contribute to nuclear planning. Finally, the staff is assessed as to its ability to meet the requirements determined earlier in the study.

The study finds the corps staff to be marginally manned, trained, and equipped for non-strategic nuclear target nomination. The basic structure and operational capabilities of the staff are found to be sound. The principal deficiencies are found to be inadequate nuclear training throughout the officer education system and an unsatisfactory vision for nuclear operations in principal doctrinal manuals, such as *FM 100-5*. These leave the corps staff ill prepared to plan or execute operations that exploit nuclear effects.

ACKNOWLEDGEMENTS

I would like to thank my thesis committee for guidance that was always on-time and on-target. The committee did much to make the research manageable and relevant. I have established professional and personal relationships that I truly hope continue for many years.

I would like to thank my wife for letting me put a computer in our bedroom and for never complaining about the sound of the printer, however late.

I would like to thank my wife, children, sister, brothers, parents, staff group, and other friends for making this one of the best years of my life.

TABLE OF CONTENTS

CHAPTER ONE

INTRODUCTION

Examining Army Assets for Nuclear Fire Planning

This thesis examines a question that, at first glance, should not be an issue: "Does a United States Army corps commander have an adequately manned, trained, and equipped staff to nominate appropriate non-strategic nuclear targets?" First of all, the United States Army does not (now) have any nuclear weapons, and furthermore, the United States Army corps has had nuclear planners for about forty years. Of course the issue is more subtle, or there would be nothing more to say. And the problem is this: Army and joint military doctrine maintains an Army role in nuclear planning, but the nuclear weapons reside in the Navy and Air Force. Targeting, coordination, and execution of nuclear operations are more difficult for Army staffs than when nuclear artillery was an option. Can an Army corps do its part, and do it well?

Perhaps it will never be appropriate to resort to nuclear warfare on the tactical or operational levels, but the American military has had the capability since 1953[1] and the (former) Soviet Union built its strategy and tactics

around nuclear weapons.[2] Both of the purposes for American nuclear forces, "to deter the use of weapons of mass destruction and to serve as a hedge against the emergence of an overwhelming conventional threat,"[3] are best met by an effective and responsive targeting methodology. An effective nuclear targeting system is surely a more credible deterrent than an ineffective system, and if nuclear weapons ever are needed, the tragedy could only be compounded by selecting the wrong targets.

By examining the sufficiency of the current system for integrating nuclear weapons into ground operations, I have sought to recommend improvements where the system appears workable, and a basis for change where the system appears to fall short. Thus the primary research question helps answer a more utilitarian question "How should the Army improve corps non-strategic nuclear planning?" by focusing the research on the subordinate questions "What nuclear planning assets does the corps commander need?" and "What assets does he have?"

In Chapter Three of this thesis, I examine the first of these subordinate questions in depth. If it was obvious what information the commander needs, this thesis would probably not be useful. Military doctrine (joint, multi-service, Army, Air Force, and Navy) identifies some of the planning requirements directly, and other requirements are implied by the same sources. Other written sources such as

theses, journal articles, operational plans, and memoranda suggest more information that may be needed in non-strategic nuclear planning. Officers and civilians responsible for nuclear planning and force structure have further ideas. By examining input from all of these sources, I attempt to derive a suitable answer to the question of what the commander needs. My goal is to do this within the context of current nuclear doctrine.

The existing Army structure for nuclear targeting and planning is the basis for Chapter Four of this thesis. I examine the corps staff cells not only to evaluate how well they can execute doctrinal nuclear duties, but also to determine how else they might contribute to nuclear planning. I also evaluate the references and equipment available for nuclear targeting, such as manuals, templates, and checklists. Furthermore, the joint staff (of a unified command) is examined to determine how it can assist the corps staff and in what ways it might replace the corps staff as nuclear planners. The objective of this chapter is to complete the information required to make a fair comparison of requirements versus resources in Chapter Five.

Chapter Five is the analysis of the primary research question: Does the Army corps commander have sufficient assets to fulfill his nuclear planning role? This question is answered by comparing the requirements determined in Chapter Three with the resources uncovered in Chapter Four.

Where deficiencies are found, this thesis proposes possible solutions, inexpensive ones within existing force structure when possible. For example, since corps lack sufficient reasonably available expertise on sister service nuclear delivery, I recommend three remedies that range from the cheap solution of simply adding a reference, to the expensive, but more effective, solution of adding nuclear trained liaison officers.

I summarize the results of the analysis into a set of conclusions and recommendations in Chapter Six. I strive to make suggestions that are acceptable, feasible, and supportable within current military budgets and political constraints.

Why Examine Army Nomination of Nuclear Targets?

Except for the absence of nuclear artillery, the current non-strategic nuclear targeting process is substantially the same as before the de-nuclearization of the Army in 1991. The target analysis references then and now include non-strategic nuclear weapons from sister services. Primary responsibility for nuclear target nomination within the Army belongs to the corps.

The initial nuclear targeting assessment is "preclusion oriented" because it seeks to tell the commander what effects he can expect from a nuclear weapon, yield, height-of-burst, and aim-point selected to preclude

specified effects on troops, structures, and equipment. Knowing the physical effects, the commander is expected to use his judgment along with staff advice to determine which set of targets, called an option, he wants to engage with nuclear weapons. Of course, he will execute only after getting authorization from the National Command Authority (NCA). "Target oriented" methodologies are then used to refine the precise aimpoints, or designated ground zeros (DGZs).[4]

Nothing happened with the loss of Army nuclear weapons that appears on the surface to have made this system obsolete. The methodologies are hardly state of the art, but many of the systems it plans for, those belonging to the Navy and Air Force, remain in the inventory.

While the nuclear targeting system did not change, much of the staff structure for nuclear targeting has changed. Following the announcement of the denuclearization of the Army, the Department of the Army solicited input from army tactical units on retention of nuclear operations officers (functional area 52A). Notably, guidance on planning for sister service nuclear delivery was lacking. Most of these nuclear operations positions were deemed unnecessary since these commands no longer retained nuclear artillery. In 1993, the Department of the Army eliminated many of the nuclear operations officer positions in response to this input. With the Army facing a personnel drawdown,

reduced nuclear staff requirements also represented a windfall for personnel managers.[5]

This reduced staff must either reorient its focus on the targets traditionally considered appropriate for aircraft delivered nuclear weapons and nuclear cruise missiles, point targets like dams and bridges, or else plan to target some of these weapons on traditional nuclear artillery targets such as follow-on or support forces. The targeting and target analysis processes should logically reflect the role envisioned for the remaining non-strategic nuclear weapons.

The issue of what targets to attack engenders new problems. Nuclear artillery and non-strategic nuclear air or cruise missile support are hardly equivalent. All of the air and naval assets can also be used for strategic targets, and some have argued that the first nuclear strike will always be strategic, regardless of the target. Nuclear artillery response could be measured in minutes, but preplanned air support is planned at least 72 hours out.[6] Cruise missiles might take considerably longer than that to program. Furthermore, recently developed smart weapons can do many (although not all) of the missions one might envision for nuclear weapons.

These are new elements that impact non-strategic nuclear targeting, and it is not obvious that the current system is flexible enough to incorporate them.

Assumptions

In this thesis I will examine ground commanders' planning capabilities for nuclear assets belonging to the Air Force and Navy. If this thesis is to have any applicability, there must be a willingness within the Air Force and Navy to accept target nominations originating from ground component commands. Some might argue that targeting of air delivered nuclear weapons should strictly be an Air Force or Strategic Command (STRATCOM) function, and that sea launched cruise missile targets should come from Navy planners or STRATCOM. Air Force doctrine assumes a theater perspective espousing centralized control of air assets.[7] While this may run counter to current Army target nomination concepts, it is not an issue for this thesis. I am assuming that nomination of nuclear targets by corps will remain standard in employing non-strategic nuclear weapons.

I am assuming an audience that has some military background. The topics of targeting and fire planning are too nested in military operations to avoid all military jargon (the terms targeting and fire planning themselves have military meaning not necessarily understood by outsiders). This assumption not withstanding, I will seek to avoid, as much as practical, other than plain English. This is especially important since the services themselves speak different languages.

Definitions

Fire support planning, or fire planning, is the continuous process of analyzing, allocating, and scheduling fire support.[8]

Interdiction fires disrupt, delay, and destroy enemy forces that, because of range limitations or intervening terrain, cannot fire their primary weapon systems on friendly forces.[9]

Non-strategic nuclear forces (NSNF) are those nuclear-capable forces, operating within a theater of operations, with a capability to employ nuclear weapons against opposing forces, supporting installations, or facilities.[10]

Non-strategic nuclear weapons are defined for this thesis as those nuclear weapons that were designed to support a battle plan or campaign plan rather than be decisive in themselves.[11] Examples include nuclear cruise missiles, nuclear artillery, and some nuclear gravity bombs. Until 1992 or 1993, non-strategic nuclear weapons were generally called "tactical nuclear weapons" or "battlefield nuclear weapons," but those earlier terms can cause confusion juxtaposed with current doctrine. The term non-strategic nuclear weapons is commonly used, but has no official definition.

Nuclear fire planning is fire planning for nuclear weapons. The nuclear fire planning system is more involved

than conventional fire planning because all potential targets are individually analyzed and approved as an option before they are scheduled. Presidential nuclear release (approval) is also required before use of a nuclear weapon.

Nuclear target analysis, sometimes called w n-eering, is the process of selecting the weapon, yie. height of burst, and aimpoint for a nuclear weapon. It is a formalized procedure using tabulated and graphical data for which target analysts are specially trained. Nuclear target analysis is the technical aspect of nuclear targeting, and is dissimilar to conventional weapon selection.

An option (formerly called a package) is a set of nuclear targets that is approved or nominated for a given mission or contingency.[12]

A strategic attack can use strategic or non-strategic nuclear weapons, or even conventional weapons; any attack expected to achieve what are loosely called vital or decisive results is, by definition, strategic.[13] Any action that is not expected to have results of this magnitude is non-strategic. Since smaller yield nuclear weapons delivered within a theater of war cannot generally be expected to achieve a vital or decisive result, they are called non-strategic nuclear weapons. There is an obvious lack of precision in these terms.

Strategic nuclear weapons are loosely defined here as weapons designed to "make vital and at times decisive

contributions in gaining a war's objectives."[14] Strategic nuclear weapons usually have a large yield and long range, such as ICBMs, SLBMs, and some gravity bombs. This definition agrees with common usage, but is unofficial.

Targeting is the process of identifying enemy targets for possible engagement and determining the appropriate attack system to be used to capture, destroy, degrade, or neutralize the target in question.[15]

Limitations

This thesis addresses issues which are current topics in the nuclear warfare community. Most of these issues cannot be positively settled through research; there is a lot of opinion in evaluating what works and what does not work. Ideally I would have liked to meet with current nuclear staff officers in the Department of Defense (DoD) and Department of Energy (DOE) to solicit their ideas and have them evaluate my analysis. Due to limited money and time, I have had to limit most of this interaction to the telephone and mail. The exception to this was the detailed assistance I received in person from the nuclear analysts at Ft. Leavenworth, Kansas.

I did not include classified sources in order to avoid problems encountered when writing a classified thesis. The review of this thesis by my chairman and second reader, both of whom are familiar with classified sources, ensured

that the analysis was not flawed by the exclusion of these sources. Most important of the sources I excluded is the Joint Strategic Capabilities Plan, or JSCP, which gives guidance for war planning, including nuclear options.

I do not believe that either of the above listed limitations has seriously affected my work.

Delimitations

For a number of reasons, I chose to write an unclassified thesis. It will be useful to more people in an unclassified form. Since basic non-strategic nuclear doctrine is itself unclassified, this delimitation was feasible.

I did some limited historical analysis to examine ways in which non-strategic nuclear weapons were integrated with maneuver, but focused my main effort on post-1991 sources. Intermittent improvements in non-strategic nuclear weapons have changed some of the basic assumptions that were made in earlier analyses. This gives further reason to focus on contemporary analysis.

Significant Outcomes of the Study

The potential significance of this thesis for nuclear training and doctrine is considerable because of its conclusions and timing. It identifies deficiencies in officer training, especially at the field grade ranks, and in operational doctrine that inhibits effective nuclear

target nomination and its related operational and logistic planning. This thesis is timely because senior Army leadership has shown a commitment to the enduring engagement of Army officers in nuclear weapons development and a new nuclear doctrine is emerging.

Many, although not all, of the recommendations could be implemented without causing excessive turbulence. Field grade education is the responsibility of the US Army Command and General Staff College (CGSC) and the War College. Since the research was done in close coordination with CGSC nuclear experts, it is certain to be seriously considered within the college. Since those same individuals develop Army nuclear doctrine, currently under revision, the thesis could influence doctrine in the near future. The War College has expressed interest in expanding its limited non-strategic nuclear training, which it could do through contacts at CGSC.

FM 100-5, the Army keystone operations manual, is currently in a 1993 version that is unlikely to change for several years. Its near elimination of nuclear concepts translates into a lack of nuclear training and doctrine. The virtually non-nuclear rewrite of *FM 100-5* was not simply an oversight; it remains to be seen if the continuing senior level concern for Army engagement in nuclear issues eventually translates into training and doctrine. This

thesis is probably not broad enough to have a significant impact on this issue of baseline operational doctrine.

One final significant outcome of this thesis is that it finds the corps well structured for nuclear target nomination and nuclear planning. The decide, detect, deliver targeting methodology enhances corps nuclear targeting capabilities and exercises the critical inter-staff communications necessary for nuclear planning. With the notable exceptions of officers understanding nuclear concepts and sister service nuclear delivery, the corps is generally well staffed, trained, and equipped for nuclear planning.

Other Literature on Non-Strategic Nuclear Planning With a Non-Nuclear Army

In the three years since President Bush's announcement directing the elimination of ground-launched non-strategic nuclear weapons, there has been little written on the use of the remaining non-strategic nuclear weapons. Nuclear ballistic missiles and potential nuclear terrorism gain most of what attention is paid to nuclear weapons today. Progressively less has been written about nuclear weapons. As the balance of terror made the use of nuclear weapons less and less likely, martial interest shifted from nuclear war to conventional capabilities.[16] There is no longer the fear of non-strategic nuclear weapons employed routinely against large NATO or Warsaw Pact troop

formations. There are, however, a few useful concepts to emerge despite the general lack of interest.

In studying the issue of whether the Army should retain non-strategic nuclear weapons, Lieutenant Colonel John D. Skelton forecast many of the issues of this thesis in his monograph "The Forbidden Weapon--The Employment of Army Tactical Nuclear Weapons" (May 1991).[17] He concluded that the Army should indeed relinquish its nuclear weapons, but gave some qualifications.

He envisioned that nuclear targeting should be a joint function, centrally controlled at theater level. Skelton noted that the Air Force and Navy non-strategic nuclear weapons could range anything that nuclear artillery could, but that better coordination was needed for the Navy and Air Force to effectively support ground operations. Part of his justification for recommending elimination of Army nuclear artillery was the reduced threat, implying that some capability would be lost. Without saying so directly, Skelton implies that the current system of Army units nominating targets to the other services needs some revisions.

In *Airpower Journal*, Spring 1993, Dr. Steven Metz examines the issue of whether the United States needs an operational level of nuclear war fighting.[18] The relevance of his article to this thesis is that he offers some thought provoking political and military questions that impact on

the use of non-strategic nuclear weapons. His military questions and possibly his political questions could not reasonably be ignored by a planner. They are therefore included in Chapter Three.

Metz's thesis is that the United States military does not now have an operational (by definition non-strategic) level nuclear doctrine, and that it is needed. While his analysis is focused above the application level of this thesis, it highlights a need for formalizing how America will use non-strategic nuclear weapons if it is compelled to do so.

CHAPTER TWO

RESEARCH DESIGN

Research Method

Well-reasoned analysis is the heart of this thesis. It is intended to examine how well the Army corps staff is structured to nominate non-strategic nuclear targets. Unfortunately, doctrine does not at this time, nor may it ever, express a definitive concept for employment of non-strategic nuclear weapons. That would depend very much on the nature of whatever crisis compels the United States to use nuclear weapons. There are, however, a range of non-strategic nuclear options which justify the possession of non-strategic nuclear weapons. This thesis identifies shortcomings in the Army's capabilities to successfully execute its role of nominating the right targets for those employment options.

The primary tools, then, are military doctrine and personal analysis. The analysis is balanced by conversations and interviews with those who are shaping Army and joint nuclear doctrine: Lieutenant Colonel Bill Siegert from the Army Staff, Colonel Grover Ford from US Army Nuclear and Chemical Agency, Air Force Lieutenant Colonel

Edward Bondzeleski (coordinating author of the joint non-strategic nuclear weapon doctrine), and Richard Wright and David Turek from the the U.S. Army Concept and Doctrine Division of the Command and General Staff College. Other research tools include the limited literature on Army employment of sister service nuclear weapons and input from I Corps and XVIII Airborne Corps on how they currently envision conducting nuclear operations.

Nothing in this approach is quantitative. In deriving the capabilities desirable in a nuclear planning staff, the objective of Chapter Three, most of the judgments are subjective and unquantifiable. To adapt a systems analysis approach might give these judgments the appearance of unbiased analysis, but would not change the subjective nature of the analysis. The interpretation of what non-strategic nuclear planning capabilities a corps staff should have is based on how the author interprets doctrine.

In doing the research and analysis I had three major objectives, each of which is covered in a chapter of this thesis. The first objective was to determine what a corps staff has to be able to do to successfully nominate the right nuclear targets. The second was to determine what assets are available in a corps to meet those requirements. Lastly, I compared the non-strategic nuclear planning requirements to the available corps assets in an attempt to determine if they are compatible. From this final

objective, the analysis, comes an appraisal of the suitability of the corps staff for non-strategic nuclear planning and suggestions on how the system might be improved.

Validity of the Findings

The validity of the findings of this thesis depends on the thoroughness of the research and the accuracy of the analysis. The logical structure of the thesis is like a pyramid. The primary thesis question is attacked indirectly through the two subordinate questions of what nuclear planning assets a corps commander needs and what assets he has available. These questions are answered by examining each through multiple perspectives and by further dividing the questions into still smaller elements. The accuracy of the findings hinges on the analysis of these smaller elements.

A problem in conducting a useful analysis of non-strategic nuclear planning emerges from the instability of nuclear doctrine at the time of the thesis research. Unless the target nomination concept is radically changed, however, most changes will not invalidate the conclusions of this thesis. It is not the details of nuclear planning, but the process, equipment, and expertise that are investigated herein. Also, being in close contact with Mr. Richard Wright and Mr. David Turek, the nuclear analysts responsible

for the next iteration of nuclear doctrine, I was able to incorporate any relevant changes to nuclear doctrine that developed during the writing of this thesis.

The results of this thesis should be useful for several reasons. In this thesis I provide a thorough, systematic look at the state of the corps staff for nuclear planning at a time of change. The research included consultation with key individuals involved in shaping future Army nuclear doctrine. While this thesis is unlikely to resolve all points of disagreement on Army nuclear planning, it at least serves as a basis to consider the problems it identifies and the options it proposes.

Issues Not Explored

Several issues closely related to corps nuclear planning that were not included in this thesis are worthy of study. They were not examined in order to restrict this study to workable limits, but should at least be mentioned because of their potential impact on the corps. They include the following questions. What type targets should be engaged by what weapons, nuclear and non-nuclear? How should one adapt the nuclear target analysis methodology to handle emerging technology and operational concepts? What organizational level should nominate targets? How well do our corps staffs actually understand nuclear planning?

These issues are of vital importance to corps, but beyond the scope of this thesis.

While the question of what types of targets should be attacked by what specific weapons is not answered, this thesis does establish that there are some targets that must be engaged by nuclear weapons to be defeated and other targets that could be defeated conventionally only at great cost. The corps staff must recognize what targets should be engaged with conventional weapons versus nuclear weapons to employ both with maximum effectiveness. The ability to make this judgment is factored in as a required capability of corps staffs.

The issue of modernizing the weaponeering (nuclear target analysis) methodology is being worked at the Defense Nuclear Agency. The nuclear target analysis methodology is of primary importance for this thesis in that it affects corps staff requirements for specially trained individuals. A user friendly methodology might be learned on the job or incorporated into the Field Artillery and/or Chemical branch schools. A more sophisticated methodology might require extensive training and the skills could be perishable. On the other hand, a more sophisticated methodology might help to raise the many political and military issues unique to nuclear targeting that must be considered. The thesis analysis considers the range of possible targeting methodologies.

Units as small as brigades have, in the past, done nuclear planning.[1] Currently, the combatant command is the primary nuclear planner with the corps nominating targets.[2] There has been some thought about minimizing the target nomination role of the corps. This issue is handled, for the purpose of this thesis, by assuming that the current corps responsibility for nuclear target nomination will remain for the foreseeable future.

The preparedness of a corps staff to execute nuclear planning depends to some degree on how much its members have thought about and practiced nuclear planning. I was unable to include a study of corps nuclear planning competence in this thesis. However, answers to questions posed by the Concepts and Doctrine Division of CGSC (see Appendix B) examined herein give some indication of how well prepared the corps are. At any rate, an assessment of corps staff competence would be quite perishable given the rapid rotation of personnel through corps staff positions.

Why This Choice of Research Design?

In this thesis I take a broad view of non-strategic nuclear planning, since it was the basis for my research. It would have been easier to simply find corps nuclear planning requirements stated in doctrine and accept them at face value. This method would have been unsatisfactory for a couple of reasons. The considerations for nuclear

planning are complex and evolving for both military and political reasons. Some detailed thinking was needed to determine what the corps staff really needs to know to nominate nuclear targets effectively. Furthermore, the body of doctrine includes service doctrine, joint doctrine, and policy documents which do not, as of now, clearly define the details of Army planning for Air Force and Navy nuclear weapons. There are no simple stated requirements.

The research could also be conducted by asking the various corps to evaluate their requirements and their needs. After all, the nuclear planners and target analysts at corps level must surely consider their preparedness an important issue. Also, since each command operates in a slightly different environment, its needs will differ somewhat. While two corps did provide some useful information, their input was insufficient as the primary source for this thesis.

The basic problem with merely collating corps' input to answer the thesis question is that many, if not most, of the issues surrounding the use of non-strategic nuclear weapons involve echelons above corps. With a non-nuclear Army, the planning system must work in a joint environment. Only when it is clear how the Army fits into the joint system can one ask if the staff is sufficiently manned, trained, and equipped for nuclear target nomination. A

broader look is required than the usual focus of tactical Army staffs.

The thesis question could also have been altered slightly to lead towards new nuclear target analysis tools or recommending a new nuclear planning staff structure. The product might be more useful, and solve a problem rather than identifying one. I opted against such an approach because I did not feel the nuclear planning problems had been clearly identified. The first step in solving a problem is to identify it. By examining the question of how well manned, trained, and equipped the corps staff is for nuclear target planning, it should become clearer what parameters the staff and targeting tools should fit.

In summary, the research design was selected to analyze a narrow question in depth, with the expectation that it would lead to a useful analysis of force design and non-strategic nuclear fire planning and targeting procedures.

CHAPTER THREE

NUCLEAR PLANNING REQUIREMENTS FOR THE CORPS COMMANDER

Chapter Objectives

In order to judge the adequacy of corps nuclear planning assets, it is necessary to determine corps staff responsibilities vis-a-vis non-strategic nuclear forces. In this chapter I will examine that issue. Official publications from the level of the National Command Authority (NCA, meaning the president and secretary of defense) to the corps level are the primary sources; these sources set up the context, structure, and concepts for the employment of non-strategic nuclear weapons. Since any Army nuclear planning is based on delivery of weapons by its sister services, in this chapter I will also examine the interfaces between the services. Finally in this chapter, I look somewhat beyond current doctrine to get a more complete understanding of what requirements may be implied by the doctrine or might arise independent of it.

NCA nuclear guidance is found in the *National Security Strategy* and *National Military Strategy of the United States*. At the level of the joint chiefs of staff are joint nuclear doctrine and the *Joint Strategic*

Capabilities Plan, Annex C (Nuclear). This last document gives nuclear planning guidance to the warfighting combatant commanders, also called Commanders-in-Chief (CinC), and is classified, so it will not be part of this analysis. The Army, as well as the services with nuclear delivery capability, have specific nuclear doctrine which impacts directly on the Army corps. Within the Army, field manual *FM 100-30* will cover nuclear operations and field manuals *FM 101-31-1/2/3* cover nuclear weapons employment doctrine and procedures. In this chapter I will also examine the past and present keystone Army operations manuals, versions of field manual *FM 100-5*, as they apply to nuclear operations. Together these documents are the primary official sources.

The Fundamental Purposes of Non-Strategic Nuclear Forces

Nuclear weapon employment concepts originate at the highest levels. Since the option to employ nuclear weapons explicitly rests with the president, only target nominations that fit within the president's concept will be ultimately approved. To ensure that nuclear targets meet operational and strategic aims, they go through a review process that is similar to air interdiction missions, but unlike most other weapons. Planners at lower echelons must understand and plan in accordance with higher level guidance. To

misunderstand or misapply guidance is to risk wasting time with targets and options that will ultimately be rejected.

The point here is that there is a continuum of targets throughout any potential battlefield, and it is necessary to understand how the NCA might allow the Army to employ nuclear weapons if one is to intelligently evaluate the corps' planning capability. Consider these two scenarios to understand how the corps' role might vary: (1) the only targets with acceptable collateral damage are enemy forces in the field, (2) nuclear weapons are needed to destroy a hardened chemical production facility. In the first case, Army forces would possibly be needed to identify and track the target or targets, and certainly be needed to exploit the nuclear effects. In the second case, the target could be planned and struck with minimal corps involvement. What does NCA guidance say that can help focus corps planning requirements?

The most ubiquitous concept in nuclear doctrine comes from the *National Military Strategy* of January 1992: "The purpose of nuclear forces is to deter the use of weapons of mass destruction and to serve as a hedge against the emergence of an overwhelming conventional threat."[1] The most recent *National Security Strategy of the United States*, George Bush's January 1993 document, briefly addresses the need for "modern strategic nuclear forces" and devotes an entire page to nonproliferation, but does not otherwise

address nuclear issues.[2] In the absence of any guidance to the contrary, the concept for employment of nuclear forces is taken to be the same for President Clinton.

To fulfill the first purpose of the *National Military Strategy*, deterrence, a nuclear employment plan must appear credible. However, it must not encourage foreign proliferation. A minimal staff focus on nuclear capabilities and a reduced emphasis on the nuclear option in doctrine both tend to make American nuclear capability appear less threatening and thus encourage nonproliferation. On the other hand, the military must appear to have an ability to successfully employ and control nuclear weapons or else the nuclear option will not appear credible. Inept employment could both discredit America's strategy of controlled escalation (the nuclear signal) and its ability to apply nuclear power in a decisive manner.

A hedge against the emergence of an overwhelming conventional threat is likewise open to interpretation. This hedge could be either strategic or non-strategic nuclear forces, or both. Since the United States does not want to provoke general nuclear war, non-strategic nuclear forces (NSNF) may be the first choice, since they are confined to a theater and are generally less destructive. If NSNF are used to defeat an overwhelming conventional force, they must be militarily effective.

Taken together, the two stated purposes for nuclear forces lead one to conclude that the military should have effective, flexible, and capable non-strategic nuclear forces, but the planning process and structure should be kept at a low profile. The second purpose, a hedge against overwhelming conventional force, implies NSNF could be used tactically, operationally, or perhaps strategically.

Purposes of NSNF as Reflected in Joint Doctrine

Joint nuclear doctrine has been recently rewritten, so that it is consistent with the *National Military Strategy*. However, it is more detailed. The two primary sources are *Joint Publication 3-12, Doctrine for Joint Nuclear Operations* and *Joint Pub 3-12.1, Doctrine for Joint Nonstrategic Nuclear Weapons Employment*.

These manuals envision NSNF as powerful yet flexible alternatives to the more destabilizing strategic nuclear weapons. NSNF could be used as a show of force to inhibit enemy escalation of war, either conventional or nuclear. This controlled use of lower yield nuclear weapons is sometimes referred to as a signal, with the objective being enemy capitulation without general nuclear war. *Joint Pub 3-12* emphasizes the importance of intermediate retaliatory steps to terminate conflicts at the lowest possible level of violence.[3] NSNF are supposed to be flexible enough to

escalate or de-escalate the level of war in response to strategic or operational aims.[4]

A second desired characteristic of NSNF according to joint doctrine, in addition to flexibility, is responsiveness.[5] Responsiveness is measured as the time between the decision to strike a target and the actual strike. Responsive NSNF would have the ability to strike high-priority, time-sensitive targets after a conflict begins. Responsiveness is more of a function of the command and control system than the non-strategic nuclear weapon systems.

Joint Pub 3-12 espouses centralized control in the form of a broad plan of action.[6] Pre-planning of theater nuclear options is in accordance with the Joint Strategic Capabilities Plan, or JSCP. Subordinate commanders plan authorized attacks in the most operationally effective manner. The employment options are very restrictive since the targets must favorably alter the operational situation. They should come across as a signal rather than a move to general nuclear war.[7]

In summary, according to joint doctrine, NSNF should be a deterrent to waging war in peacetime (as is the entire U.S. military), yet should not encourage nuclear proliferation. In wartime, NSNF are a military option which could, in some circumstances, assist in accomplishing war aims with less risk of nuclear escalation or encouraging nuclear

proliferation than strategic nuclear weapons. A wide range of employment alternatives is seen as a way to limit escalation. In any event, all nuclear weapons will be carefully controlled for political reasons.

Responsibilities of the Theater Combatant Commander

The theater combatant commander, or CinC, is charged with preparing nuclear forces for the full range of possible employment options. The basis of his preparations is the JSCP. He is required to define theater objectives, select supporting nuclear targets, and develop plans. Detailed nuclear planning is normally accomplished at this level with U.S. Strategic Command (USSTRATCOM) assistance where appropriate.[8]

I cannot examine the JSCP and keep this thesis unclassified, but one should consider the range of targets that might appear in theater contingency plans (CONPLANS). *Joint Pub 3-12* states that NSNF should be responsive, able to strike high-priority, time-sensitive targets that emerge after a conflict begins.[9] These would not be targets that could be pre-planned in the usual sense. Certain categories of targets could be identified, but the detailed planning would occur during a conflict in response to intelligence. It is conceivable, perhaps even probable, that many of these emerging targets would be mobile. This makes them more difficult to strike and requires the delivery system to be

linked to real time intelligence. It is clear that the theater combatant commander must have a responsive planning system for nuclear employment.

The theater combatant commander may process targets nominated by subordinate commanders or plan targets without their input. He plans, coordinates, and controls nuclear targets while component commanders execute the strikes. All commanders with nuclear planning capabilities may be required to identify targets and request authorizations to strike. The combatant commander then refines the options, approves or disapproves them, and combines them into options or sub-options to be executed at the direction of the NCA.[10]

Thus, one can see that the theater combatant commander is the focal point for non-strategic nuclear operations. Service components nominate and execute nuclear options. The theater combatant commander approves or disapproves within the latitude given him by the National Command Authority.

Responsibilities of Corps Commanders

The primary reference for ascertaining corps and above nuclear command responsibilities is Army field manual *FM 100-30 Nuclear Operations* which is now in draft form. This manual emphasizes the strategic effects possible from any yield of nuclear weapon and the primacy of the operational level commander. It sets forth operational

responsibilities of both operational and corps commanders. Division level responsibilities are limited to force protection.[11]

The term operational commander is necessary because the actual size unit with operational responsibilities depends on the theater command structure. The operational level of war is concerned with the conduct of campaigns and major operations. Primary operational planning responsibility usually falls on the theater combatant commander and his service or functional component commanders. A corps will usually plan at both the operational and tactical levels of war. Planning is usually primarily tactical, but it could be mostly operational if the corps concurrently serves as the ground component command or joint task force command. The term operational commander could refer to a joint force commander, a numbered army commander, a corps commander, or even a division commander, depending on the size of force in theater.

Joint staffs of combatant commands do peacetime nuclear fire planning through the deliberate nuclear planning process, within the Joint Operation Planning and Execution System (JOPES).[12] They coordinate their plans with subordinate commands, which include Army corps. The nomination process may be used in this planning. If a crisis is unforseen, the crisis action nuclear planning process is used, which may also involve target nominations.

Joint non-strategic nuclear weapons (NSNW) employment involves several layers of command. The NCA provides controls and constraints for the use of NSNF to the combatant commander. The combatant commander may have corps commanders (or higher echelon tactical commanders) plan options and nominate targets. The operational commander provides the corps commander with the number, type, and yield of NSNW; geographical areas of employment; duration of employment; and types of targets to be attacked. The corps nominates mobile land battle targets (MLBT) and fixed targets for NSNF.[13] The Joint Targeting Coordination Board at operational level receives the nominated targets and decides if the target should be serviced with nuclear weapons.[14] The final approving authority is the NCA.

The operational commander is the execution focus. He sends orders to execute nuclear strikes to the Navy and Air Force, and he sends information to the corps on execution. The Air Force passes strike information to the corps through the Battlefield Coordination Element (BCE) which is provided by the operational level commander.

The corps commander will control NSNW used inside the fire support coordination line (FSCL). If NSNW are used outside the FSCL, the corps commander is not involved in execution, but the operational commander informs him of the strike.

Corps translate operational guidance into specific tactical targeting priorities; in other words, they decide what nuclear targets best support their plans to meet the operational commander's intent. Although nuclear targeting includes some unique requirements, the decide, detect, deliver targeting methodology used for conventional targeting is likewise appropriate for nuclear targeting.[15] This methodolgy is specifically focused on synchronizing limited intelligence and fire support assets with the scheme of maneuver. In nominating nuclear targets, corps must consider the unique nuclear weapons effects: radiation effects, fires, tree blowdown, and other collateral damage.[16] Political implications must be considered and may well be paramount.

A useful summary of corps and division requirements is the chart of corps and division warfighter tasks found in *FM 100-30 (Draft)*. This chart is included as Appendix A to this thesis.

Army Nuclear Weapons Employment Procedures

Field Manuals *FM 101-31-1/2/3* contain the detailed procedures and tables for nuclear weapons planning. They also contain corps and division requirements for nuclear weapons planning as understood by the authors. Unfortunately, the manuals are dated 1986 with change 1 from 1989. Since this was during the nuclear artillery era, they are

less definitive on how Army planners should think about sister service nuclear planning than more recent publications. The tables and procedures are still currently in effect, but are due to be replaced by *Joint Publications 3-12.1/2/3*. Since these manuals must be used to analyze the effects of nuclear weapons, the principles contained in them may, be more widely read than *FM 100-30*.

Most of the employment principles in *FM 101-31-1* are consistent with more current doctrine. Deterrence and controlled escalation are both described in the manual. Four employment guideline are listed: (1) weigh relative effectiveness (conventional versus nuclear), (2) recognize collateral risks, (3) consider enemy response, and (4) plan effectively.[17] The first three of these guidelines recognize the unique political aspects of using nuclear weapons along with their destructive power. These sentiments are consistent with the most current doctrine. The fourth employment guideline, plan effectively, may not apply as well.

Planning effectively, as explained in the manual, means to integrate nuclear fire support in all operational planning and in all phases of air-land battles (a term no longer used). This seems to imply a robust staff knowledgeable of nuclear planning. Totally integrated nuclear fire support in all phases is realistic only with abundant nuclear weapons. This explanation sounds more applicable to

nuclear artillery, and should probably be tempered with the understanding that nuclear artillery is no longer an option.

The guidance on nuclear weapons in tactical operations,[18] if taken literally, is difficult to implement without nuclear artillery. The army maneuver commander is portrayed as the clear focus of the nuclear effort, as opposed to the joint commander who is primarily responsible in newer doctrine. The maneuver commander is told to anticipate enemy courses of action so he can secure nuclear release early enough to employ nuclear weapons in a timely manner. This type of thinking is probably still valid, but not with the control and timeliness envisioned of nuclear artillery when the manual was written.

Chapter Two of *FM 101-31-1* explains command responsibilities and staff procedures. Command guidance is supposed to provide as much information about employing nuclear weapons as employing maneuver forces and conventional fires.[19] Commanders and staff officers need to understand nuclear effects, employment procedures, capabilities and limitations of available delivery systems, and combat support requirements for delivery systems (e.g. suppression of enemy air defense). Target analysts are to provide technical advice. Intelligence efforts are crucial to effective targeting.

Doctrine identifies the principal planning group for nuclear fires as well as conventional fires as the fire

support element (FSE). Because of the enormous power of nuclear weapons, maneuver may be designed around the fire plan rather than fires supporting the scheme of maneuver. The FSE plans nuclear fires to support the deep, close, and rear battles according to this doctrine, but Air Force and Navy systems can probably only support the deep battle. The target analysts of the FSE work closely with intelligence, operations, logistics, and civil-military affairs officers.

Consistent with joint doctrine, Army doctrine holds the corps primarily responsible for contingency planning among Army units. According to *FM 101-31-1*, both corps and division staffs plan nuclear fires.[20] That notion is outdated, since divisions no longer have any target planning responsibility. Nevertheless, a division commander could nominate targets to corps if he chose to.

FM 101-31-1 also states that the FSE controls nuclear packages (now called options) and maintains communication with delivery units. Army control is no longer applicable without nuclear artillery. The manual does address communications with the Air Force and Navy for nuclear operations. Air Force support is coordinated with the Tactical Air Control Center (TACC) (now called the AOC, air operations center) through the BCE. Navy support is coordinated through the Naval and Amphibious Liaison Element, or NALE. Air and naval commanders make the final decision on yields and delivery methods, but must meet

damage criteria and constraints requested. Clearly, Army commanders will have to factor in their lessor degree of control and interservice communications interfaces.

As is illustrated in some of the discussion above, one must be careful in applying doctrine from *FM 101-31-1* because of recent changes, although the procedures are still valid. In determining what the commander needs his staff to be able to do, the requirements in this manual must not be accepted at face value. For the purposes of this thesis, procedures and concepts which do not conflict with more recent doctrine are accepted as valid.

Air Force and Navy Interfaces in Army Nuclear Planning

Since approved Army nominated nuclear targets will be engaged by sister services, it is important to examine how the nuclear planning and execution system works at the interfaces. How critical the Army is to any particular plan will impact on army communications assets allocated to nuclear planning. To resolve problems and coordinate the effort, any staff element required to do nuclear planning must be able to communicate with whomever it needs.

The Battlefield Coordination Element (BCE) is the key Army-Air Force interface for nuclear planning. The BCE keeps the air operations center (AOC) abreast of the land battle. Consequently, a functioning BCE must have communications with corps.[21] The Army members of the BCE

are especially interested in Air Force targeting since air interdiction is key to the ground commander's deep battle. Doctrinally, the BCE is the information conduit for nuclear execution. Communications should not be a problem, and the personnel in the BCE should be able to handle their responsibilities in the nuclear planning process if they have the right training.

The Navy interface in the nuclear planning process is less formalized. There is a planning interface with all of the services at the joint targeting coordination board. Communication through air naval gunfire liaison teams is possible through division level. A Naval Liaison Officer (NLO), who will probably have no nuclear expertise, will be assigned to a corps headquarters in wartime when deemed appropriate. The Naval and Amphibious Liaison Element (NALE), located at the Air Operations Center is probably the most direct information conduit available to the corps. The NALE performs the same functions for the naval forces as the BCE does for the Army.[22] Lastly, information could travel down the chain of command from the ground component commander.

Planning may occur at the joint level without the target nomination process. This would depend on personalities, time available, and the complexity of the operation. There could conceivably be consultation rather than target nomination. The detailed planning is not done

by corps staffs anyway. They do enough analysis to be able to make intelligent target nominations that support the commanders scheme, consider unique nuclear effects, and are feasible with NSNF available.

Implied Doctrinal Requirements

It is helpful to examine nuclear doctrine from the recent past in order to understand the doctrine of today and extract what capabilities are needed in today's corps staffs. The military focused more on nuclear weapons employment during the cold war when nuclear weapons were more prominent in America's national military strategy. Some of the old planning concepts and capabilities may be useful to retain. Clearly some mindsets have completely changed, and the elimination of certain doctrine implies a change in priorities.

The development of current Army doctrine has implications for nuclear forces. Current Army doctrine, a modification of Airland Battle doctrine, was developed in response to deficiencies identified in plans for a forward, linear defense of western Europe. A major shift from the pre-1982 doctrine of active defense is a focus on deep battle, especially by corps commanders.[23] This is the part of the battlefield where the current stockpile of non-strategic nuclear weapons is likely to be employed, if employed at all. As long as a corps commander fights the

deep battle, he must be concerned about when and where non-strategic nuclear weapons are employed. He may need them to counter the Soviet tactic of echelonment if the foe has copied Soviet doctrine.

Two key concepts that distinguished Airland Battle from its predecessor are interdiction and integrated battlefield.[24] The integrated battlefield linked non-strategic nuclear weapons and deep second echelon interdiction into operational maneuver and the tactical scheme. Conventional and nuclear fires were integrated as well as maneuver/fire support and air/land operations. Nuclear operations were considered mandatory for battle success against the Soviets.

Today's *FM 100-5, Operations*, the keystone manual to Army doctrine, barely mentions nuclear combat, and makes no mention of American offensive use of nuclear weapons. The *National Security Strategy* of 1993 states that "with the end of the Cold War, there are no significant hostile alliances," and claims that the threat of "a European-wide war, potentially leading to nuclear exchange ... would take years to rekindle."[25] But as General Powell indicated in the *National Military Strategy*, America's nuclear weapons are a hedge against the emergence of an overwhelming conventional threat, and threats to American interests can rise quickly. If non-strategic nuclear weapons were to be

used against an overwhelming conventional threat, the doctrine from previous versions of *FM 100-5* might re-emerge.

In 1980, the corps was seen as central to nuclear fire planning.[26] The primary nuclear mission was to disrupt follow-on Soviet echelons and, if necessary, destroy first echelon divisions. In the attack, nuclear weapons could create gaps for maneuver, destroy enemy reserves, obstruct enemy movement, and disrupt enemy electronic operations with electromagnetic pulse.

A closer integration of air and land battle improved joint deep battle capabilities. The battlefield air interdiction (BAI) concept had the corps locate and prioritize interdiction targets.[27] This enabled the corps commander to better engage second echelon forces to shape the close battle to his advantage. BAI is still valid NATO doctrine, but American Air Force doctrine does not distinguish between types of air interdiction. In any event, air interdiction is probably the most likely Air Force non-strategic nuclear mission. It is easy to envision that the corps commander would be very concerned with the NSNF interdiction and want a degree of control and capable advisors.

Another element of old doctrine worth reviewing is the types of nuclear targets envisioned over the past decade. Some of these targets may not be desirable and/or achievable by current NSNF, but they are worth reviewing

since they show how nuclear weapons were originally conceived in battle when they were expected to be used.

From the 1976 version of *FM 100-5* there is an evolution in the planned use of nuclear weapons. In 1976 they were primarily to neutralize the lead elements of the second echelon and eliminate committed echelon support units and fire support systems.[28] In 1982 they were to destroy bridges, block defiles, and obstruct routes in depth. BAI became a primary element of deep battle. Preferred nuclear targets were enemy nuclear delivery systems, key command and control elements, support forces to the rear of committed elements, and reserves. Brigade and division commanders developed nuclear targets.[29] In 1986 the emphasis shifted to conventional rather than nuclear warfare. Political and strategic objectives came to prominence in doctrine. The preferred targets were the same as in 1982, but divisions and corps developed nuclear targets. The success of operations was not supposed to depend on nuclear weapons.[30] In the 1993 version of *FM 100-5*, as stated before, nuclear operations are barely mentioned.

What should this tell us about planning for the use of nuclear weapons? We should not plan on using them non-strategically as the weapon of choice. Planning responsibilities have been rising to ever higher levels, and might move to the joint level rather than corps level (although maybe sacrificing effectiveness). Nothing in the new *FM*

100-5 indicates that the targeting suggestions from earlier versions might not still be good options, but some of them are more appropriate for nuclear missile artillery than current NSNF. At least those target types can be considered for NSNW, since they remain very important targets to the corps commander.

Unique Nuclear Considerations

Dr. Steven Metz examined what he sees as a lack of operational nuclear war fighting doctrine in *Airpower Journal*, Spring 1993. Within his article are two lists of questions which he thinks could aid an operational nuclear planner: military/operational and ethical/political/strategic. His questions are really considerations that are not original, but he has put them together in two lists in a way not found in doctrine. The strategic level questions apply for the most part to the NCA and joint planners; corps or below will not likely be the appropriate level for such questions. The military/operational questions, on the other hand, might be a useful addition to doctrine. Since corps nuclear planners will have to confront the issues raised by Metz's questions, the military/operational questions are included here to help determine what talents the corps commander needs from his nuclear planners.

- Are nuclear weapons militarily necessary? What advantages do nuclear weapons have over high-yield conventional weapons?

- What are the risks, especially in terms of provoking a nuclear, chemical, or biological counterattack? Are these risks acceptable?
- How will the use of nuclear weapons affect the campaign plan in terms of phasing, tempo, and axes of advance or retrograde?
- What specific strike packages [sic] and targets will have the desired effect? Will demonstrations have the desired effect without actual strikes?
- Can nuclear weapons be used in an offensive mode, or should they be reserved for a last-ditch defense?
- If nuclear weapons are used offensively, are friendly forces equipped and trained to consolidate any advantages gained?
- What psychological effect will nuclear weapons have on the enemy? Will they break resistance or stiffen it? What psychological effect will they have on friendly forces?
- What are the provisions for command, control, communication, and intelligence? ...
- What are the combined-force considerations? Should our allies be involved in ... decisions about strike packages and targeting?
- What are the civil-affairs considerations? Are we prepared for emergency services and reconstruction?
- How will the use of nuclear weapons affect options for ending the war?[21]

The Impact of Smart Weapons

Another consideration in assessing what the corps staff must be able to do is the impact of smart (target-seeking) weapons on the potential use of non-strategic nuclear weapons. When smart weapons can achieve the same goals as nuclear weapons, smart weapons will be the weapons of choice. They are less destructive and do not carry the same political implications as nuclear weapons.

Precisely because they are less destructive, however, smart weapons cannot accomplish all nuclear missions. Area targets such as large troop concentrations

need the yield of nuclear weapons. Smaller hardened targets likewise require a larger yield than found in smart weapons when planners are uncertain where within the shelter the desired target is.

It is true that smart weapons have made nuclear weapons less important for certain types of targets, and perhaps non-strategic nuclear weapons are unnecessary in today's strategic environment. However, that is not the opinion of our civilian and military leadership, and the corps need not concern itself with the issue. Nuclear weapons should not doctrinally be used for missions achievable by available conventional weapons, to include smart weapons. This is just another factor for the nuclear planner to consider.

What Capabilities are Needed at Corps for Nuclear Planning?

The objectives of this chapter have been to examine the Army role in non-strategic nuclear planning and, more importantly, to evaluate what capabilities corps staffs need for non-strategic nuclear planning. In this final section, I will attempt to reduce the previous analysis to a list of capabilities that corps need for effective nuclear target nomination.

For the Army to fulfill its doctrinal role, the corps must be able to nominate the right targets for the given strategy and to exploit the effects of any nuclear

strikes. The division does no nuclear planning, unless it is the operational command level (no corps in theater). Therefore, the following list generally applies only to corps.

Those who plan for non-strategic nuclear weapons on the corps staff should:

1. Understand and reflect national level political guidance as passed by the joint commander

2. Understand and be able to plan for limited nuclear strikes and highly controlled nuclear escalation used as a political signal

3. Do nuclear planning expertly, but limited to perhaps 5% of their duties, since operations will most likely be conventional

4. Plan nuclear fires that achieve or significantly advance tactical, operational, and strategic aims

5. Understand and consider the strategic implications of the use of NSNW

6. Understand and practice communications with appropriate nuclear planners and executers from sister services

7. Estimate the responsiveness and reliability of all NSNF available in theater

8. Work with joint plans and JOPES

9. Work closely with G-2, G-3, and G-5 for target acquisition, target tracking, integration with the scheme of maneuver, and consideration of civil impact

10. Know conventional targeting and interservice weapons systems, including smart weapons

11. Know unique nuclear effects such as nuclear radiation, fires, tree blowdown, electromagnetic pulse, etc.

12. Be knowledgeable of air delivered NSNW and TLAM/N delivery procedures to be able to anticipate battlefield problems

13. Have communications with the BCE and Naval and Amphibious Liaison Element (NALE)

14. Understand air interdiction and the deep battle

15. Be able to devote the time necessary to do nuclear planning under battlefield conditions

16. Be able to answer the type of operational questions posed in Metz's article

CHAPTER FOUR

STAFF AND EQUIPMENT AVAILABLE FOR CORPS NUCLEAR PLANNING

In the previous chapter I explored a corps commander's nuclear planning responsibilities and hence the qualities he needs in his staff to effect nuclear planning. Next I examine the corps staff structure to determine what staff elements could do the required planning, what equipment and training they have that prepare them for the responsibility, and how they are situated to communicate with the various nuclear players. Like the last chapter, this one is based on doctrine yet is not limited by doctrine in its conclusions. Each element of the staff is considered as a possible contributor to nuclear planning, regardless of explicit doctrinal responsibilities. The actual planning methods of today's corps were solicited through questionnaires and are included in this chapter. Chapters Three and Four contain the necessary information from which to evaluate, in Chapter Five, the primary thesis question: "Does a United States Army corps commander have an adequately manned, trained, and equipped staff to nominate appropriate non-strategic nuclear targets?"

It is somewhat inexact to examine the organization of a corps staff because the structure is neither fixed within a given corps nor totally consistent between the corps. The corps organization is flexible and dependent on the commander's and chief of staff's concepts. Missions can affect the staff structure, and the corps are allocated to different contingencies. Individual talents and experience affect the degree of responsibility in given positions. Army doctrine gives a commander wide latitude to organize his staff within the constraints of the documents that authorize personnel and equipment (called MTO&E and TDA).[1] Despite this flexibility, the generic staff structure of *FM 100-15-1, Corps Operations Tactics and Techniques* reasonably approximates the structure in the actual corps and is satisfactory for this analysis.

While nuclear planning could conceivably occur anywhere in the staff, and in this thesis all of the staff is considered, the factors uncovered in Chapter Three make the Fire Support Cell of the corps main command post (CP) the best center for nuclear planning. Instead of trying to prove this premise immediately, I first compare the corps and joint staff; then compare the tactical, main, and rear CPs; and thirdly examine the assets that each of the corps staff cells bring to nuclear planning. In doing so, I show the nuclear planning process should really be a joint effort of all of the cells of the main CP.

Corps Versus Joint Staff Requirements

It is important to understand the limits of corps nuclear planning responsibilities to avoid overstaffing the corps for nuclear planning. The principle agents for nuclear planning, as covered earlier, are the unified command or joint task force along with STRATCOM. The corps responsibilities are limited to nominating nuclear targets to higher headquarters and carrying on with the corps tactical mission in the resulting conventional or nuclear environment. In order to nominate useful targets, the corps may have to acquire and track them and be able to exploit the destruction of those targets.

Many scenarios would not require corps target nomination and really no corps participation beyond force protection from nuclear effects. For example, destruction of a hardened chemical production facility out of the corps area of interest would probably not be coordinated with corps. Such a scenario requires no expertise within the corps beyond NBC (nuclear, biological, and chemical) defense training done at unit level and the technical expertise of the corps chemical officer and his staff.

On the other hand, American military ability to exploit nuclear effects could be critical to mission success, and in such a situation, the corps needs much more expertise. For example, if the opposing Army is a regional threat, and its incapacitation is part of the desired

end-state, then a nuclear strike against an operational reserve's command and control (or other target) might be exploited by corps maneuver. With such a plan, the nuclear strike must be at the right place, at the right time to be exploited. The corps in this case may have more focused intelligence and understand its own capabilities and limitations better than the joint staff. The corps would probably be asked to nominate the nuclear target(s).

It is fair to ask if such a scenario is both consistent with national policy and realistic since it costs time and money to train for this capability. National policy concerning the use of nuclear weapons really rests with the word of the president, and the president's decisions are not always consistent with stated policies (as in intervention in the Korean War), but we must still return to the National Military Strategy as a guide. Within the National Military Strategy of 1992, nuclear weapons are described as a hedge against the emergence of an overwhelming conventional threat. The small initial force on a contingency operation might easily be overwhelmed conventionally, a scenario faced by the 82d Airborne Division on Operation Desert Shield.[2] It would not take too liberal of an interpretation of the National Military Strategy to imagine the use of nuclear weapons had the Iraqi Army attacked immediately into Saudi Arabia.

Of course, in Desert Shield there was no corps in place with planning responsibilities until more force had built up, but corps are sometimes used as JTFs and could find themselves in this situation. And this brings out one more consideration, that of the corps as a JTF. When a corps becomes a JTF, the nuclear responsibilities of the operational commander shift to corps. Since a corps is augmented when designated a JTF, those challenges are addressed in this thesis only insofar as they affect army-wide officer training requirements.

Personnel and Equipment Found in the Corps

FM 100-15-1 has compiled a listing of the personnel and major equipment in a corps staff based on Army Tables of Organization and Equipment (TO&Es).[3] While TO&Es are modified for any specific corps, and the staff organization varies somewhat, this list represents the Army baseline organization. Variances from doctrinal operation are reflected in the corps questionnaires analyzed in a later section of this chapter.

The Command Post Structure

The doctrinal responsibilities for nuclear planning belong to the main command post.[4] The concept for how the corps might use nuclear weapons could appear anywhere on the battlefield, at the CPs or with the command group, but the main command post is where the detailed planning and

coordination occur. The battle focus and equipment of the main CP make it overwhelmingly a better location than either the tactical CP or the rear CP.

The tactical command post (TAC CP) fights the current, close battle.[5] It is an austere organization and does not operate on an appropriate time cycle to consider Air Force or Navy delivered nuclear weapons.[6] Current doctrine severely limits the use of nuclear weapons in the close battle. *FM 100-30* states that nuclear weapons should not normally be used in the close battle; those used should present a minimum risk to unwarned troops. The redesignation of tactical nuclear weapons as non-strategic nuclear weapons implies the same message: nuclear weapons are not normally close battle weapons.

The rear CP is even easier to eliminate as a viable option for nuclear planning. Personnel in the rear CP focus on the rear battle and rear operations.[7] Since the rear area is defined by the presence of vulnerable friendly troops primarily involved in support, nuclear weapons would clearly produce unacceptable friendly casualties.

The corps main CP, then, by the process of elimination, is the best location for nuclear planning. By examining how the main CP is organized, one can begin to evaluate its capability to effectively nominate nuclear targets. In the next several sections, the structure is analyzed from the viewpoint of what each subelement, or

cell, can contribute to nominating and exploiting targets for non-strategic nuclear weapons.

The corps main CP consists of six functional groupings, called cells, in four locations: CP headquarters and currents operations cells collocated, plans and combat service support cells collocated, intelligence cell, and fire support cell.[8] Current doctrine calls for the dispersal of these cells to reduce the electronic and visual signature and to prevent its destruction by a single attack. In particular, the fire support cell has a very significant electronic signature from its Air Force and Army high-frequency radios, digital FM or AM tactical fire direction signals, and tactical radios.[9]

While the dispersal championed in the latest *FM 100-15-1* is not common practice yet, the cells are the structural basis on the main CP, so it makes since to examine the corps staff in terms of the cells. Nuclear planning could either be conducted within a single cell, or a group could form from several cells, or a certain cell could be the planning center and be augmented by personnel from other cells. By considering what each cell can contribute to the process of nuclear target nomination, I have tried to determine what, if any, option can meet corps nuclear requirements.

Fire Support Cell

Almost every function of the fire support cell supports planning and exploiting of nuclear fires. These functions can be reduced to five general categories: (1) plan, coordinate and synchronize corps fire support; (2) control delivery of lethal and non-lethal fires; (3) coordinate airspace through the Army Airspace Command and Control (A^2C^2) element; (4) coordinate tactical air support through the Air Support Operations Center, Tactical Air Control Party, and Naval and Amphibious Liaison Element (NALE); (5) interact with the other staff cells to integrate fire support in plans, receive target information, and synchronize fire support in operations.[10]

The fire support cell has historically been the focus of nuclear planning for several reasons and offers many advantages. For at least a few years to come, several of the artillerymen in the fire support cell will have had nuclear artillery experience, which to some (perhaps small) degree is transferable. Since the fire support cell is the nucleus for corps fire support planning, and nuclear fire planning is similar in many ways, the fire support cell has inherent advantages in its structure. The fire support cell routinely coordinates with the Air Force through the collocated Air Support Operations Center (ASOC)(although not on nuclear matters) and is an operating base for Air Force and Navy fire support liaison.[62] Furthermore, the Fire

Support Cell at corps level is concerned mainly with deep targeting, and nuclear targets will almost certainly be deep targets given the delivery means.

The fire support cell coordinates deep air and ground operations in the corps area. It coordinates suppression of enemy air defenses (SEAD) for air interdiction sorties and eliminates unwanted duplication of targets within the corps boundaries. It is also the location of the army airspace command and control (A^2C^2) element which interfaces with the Air Force and Navy through the BCE.[11] These functions are important for nuclear planning if the nuclear weapons are air delivered. The fire support cell also routinely keeps abreast of special operations personnel and deep maneuver units to prevent fratricide,[12] an issue which escalates in importance with nuclear weapons.

The technically trained nuclear target analysts (ASI 5H) are found in the fire support cell, although they could easily be transferred to another cell.[13] Why they should not be transferred is that they spend most of their time analyzing conventional targets, and thus learn a great deal about targeting that could enhance their nuclear targeting skills. The effects of a nuclear strike versus a conventional strike will certainly be of interest to the corps commander.

Target analysts currently have ten days of specialized training in the Nuclear and Chemical Target Analyst Course (NCTAC) at Fort Sill, Oklahoma.[14] Two trained analysts are authorized in the corps according to *FM 100-15-1*. Until 1993 there was a lieutenant colonel authorized as a nuclear effects officer, who was a nuclear weapons officer (functional area 52) as one of his career specialties, but these slots disappeared with the loss of nuclear artillery.[15] Target analysts are usually artillerymen, but are not required to be experts in nuclear effects. They have the technical target analysis training to extract effects information from tabulated data and to manipulate the data, but insufficient scientific knowledge to provide detailed understanding of how the tables were derived (which may not be needed at this level anyway).[16]

The target analyst from the fire support element (FSE) of the fire support cell is one of several members of the targeting team who plan and execute the targeting process. The conventional targeting process doctrinally carries over to nuclear targeting while adding the specialized contributions of the target analysts. Their analysis is oriented initially on the preclusion of specified damage to friendly personnel, equipment, and structures, and includes rough predictions of the entire range of nuclear effects. The analysis gives the commander an estimate of target effects for selected nuclear yields,

weapons, heights-of-burst, and aimpoints. It cannot be adapted to specific terrain or weather except that wind is included in fallout pattern predictions.[17]

Targeting for conventional weapons overlaps nuclear targeting significantly. The targeting process includes acquisition of targets from all sources, evaluation of target payoffs, evaluation of the precision and accuracy of target location, communication with controlling headquarters for delivery systems (to include Air Force and Navy), and synchronization of deep targets with the overall battle plan.[18] All of these functions are likewise needed for nuclear targeting of non-strategic targets, so it simplifies operations to include nuclear targeting as a targeting team function.

With all of the advantages outlined, the fire support cell has many capabilities which satisfy the corps nuclear target nomination requirements. It is not, however, able to meet all of the requirements derived in Chapter Three (pages 47 and 48) better than all of the other cells, as the upcoming analysis of those cells demonstrates. What can be concluded from the above analysis is that the fire support cell can contribute substantially to nuclear target nomination. This is true since the requirements for conventional targeting largely overlap the battlefield information, technical and tactical expertise, coordination

requirements, and communications channels needed for nuclear target analysis.

Plans/Combat Service Support Cells

The Plans Cell projects a view of the entire corps battle (close, deep, and rear) and develops feasible options for the execution of future operations.[19] The collocated Combat Service Support (CSS) Cell concentrates on logistical support of operations; its concern with nuclear operations is limited to force protection of logistical elements and logistically supporting operations that exploit nuclear effects. No further discussion of the CSS Cell is needed.

The Plans Cell, on the other hand, with its concentration on future operations and concern with all aspects of combat operations, is in some respects a natural focal point for nuclear planning. Since non-strategic nuclear weapons can be expected to totally change the complexion of future plans, the plans cell has a great stake in nuclear planning. The doctrinal involvement of the Plans Cell in nuclear operations is explained in *FM 100-15-1* as a responsibility to plan for selective release of non-strategic nuclear weapons and to integrate their use in future operations.[20]

The Plans Cell has few personnel that one would expect to be familiar with nuclear targeting. According to *FM 100-15-1*, the Plans Cell has one artilleryman designated

as a Nuclear Weapons Officer and three fire support personnel: one officer, one non-commissioned officer, and one enlisted. However, the Plans Cell need not have targeting experts to plan nuclear fires; what it does need is a good general base of knowledge on nuclear operations. The Plans Cell could depend on the Fire Support Cell for targeting expertise and interservice nuclear delivery liaison. Planners would also need target information from the Intelligence Cell if their planning was to be specific enough to select targets. This theme is common when considering the nuclear target nomination process: the various cells of the main CP contribute particular unique areas of expertise.

Headquarters/Current Operations Cells

The collocated headquarters and current operations cells are central to the operation of the corps main CP. Most of the essential decisions are made in these cells, operations plans are finalized and disseminated, and the total staff effort is integrated.[21] To the degree that a request for delivery of non-strategic nuclear weapons is a command decision relying on the judgment of the commander, this cell is central to nuclear planning. Indeed, in many cases detailed analysis will only confirm or deny the supportability of a commander's concept which is primarily intuitive. The strategic implications of nuclear weapons

may be better understood by the commander or chief of staff, who are presumably focused on the big picture, than by the more technically focused staff.

All of this notwithstanding, *FM 100-15-1* does not explicitly prescribe any nuclear responsibilities to the headquarters and current operations cells except for the fire support operations officer to coordinate special requirements for nuclear fires. The fire support operations officer, a major, is the only fire support specialist in the cell. Additional nuclear expertise, including a colonel and a sergeant major, is present in the nine chemical corps soldiers assigned to the cell.[22]

Communications from the headquarters/current operations cell link to the other cells and are generally redundant.[23] Communications with echelons above corps are a priority since they are needed to effect command. Communications from this cell with sister services would, however, not be commonplace unless the corps was serving as a JTF, and in that case the JTF Joint Planning Cell would become the focus of command.

The headquarters and current operations cells are central to current operations, nuclear or otherwise, and are the locus for key decisions. They have the strategic and operational perspective critical to properly employing nuclear weapons. On the other hand, these cells fall short of being self-sufficient in nuclear weapons and targeting

expertise, and are untrained in targeting and coordinating deep fires.

Intelligence Cell

The intelligence [illegible]quests, collects, and analyzes intelligence information from all sources to produce and distribute combat intelligence.[24] It interacts heavily with the other cells in a supporting role, providing situation information to update current operations, current and anticipated enemy actions on which to base plans, and target development for the fire support cell.[25] It is not in the business of making recommendations to the commander on friendly courses of action, and thus could not easily assume a nuclear planning role. Of the four main CP cell locations, the intelligence cell is the poorest equipped to be a center for nuclear planning. The only point in its favor is its excellent access to enemy information and ability to locate and track potential nuclear targets.

Nuclear Planning Equipment

The final step in this examination of the corps main CP is to inventory the equipment available to enable successful nuclear target nomination. The intelligence gathering equipment that reveals enemy intentions, exposes enemy weaknesses, locates and tracks potential targets is critical to successful nuclear targeting. However, it is equally critical to strictly conventional operations so it

will not be examined here. One could say the same for the communications network, which is likewise not examined. The focus here is on those pieces of equipment which help the commander decide what weapon to nominate for use and where and when to use it.

For the operational decisions the commander must make there is very little equipment. He must rely on his life experience, doctrinal guidance, and higher level plans and orders. Unfortunately, or perhaps fortunately, nuclear experience is lacking. If the commander falls back on doctrinal insight, he will find the principal warfighting manuals with little to say. He will have to go to *FM 100-30, Nuclear Operations* (currently being updated) for sufficient detail in order to gain a basic understanding of his task. Since the subject is now nearly absent from service school curricula, he has probably not spent a great deal of time studying potential nuclear combat since he became a general officer. He lacks any decision aids to steer him to the types of questions posed by Dr. Metz, which are presented in Chapter Three.

The technical element of nuclear planning is better supported. Nuclear target analysis at the corps level consists primarily of finding an appropriate nuclear yield, weapon, height-of-burst, and aimpoint. This is accomplished by using tabulated and graphical data from *FM 101-31-2* (due to be replaced by *Joint Publication 3-12.2*). The details on

how the tables are used depends on whether the target can be better described as an area or a point target, whether or not the target is roughly circular, and whether or not the aimpoint needs to be displaced from the target center.[26] There are only a few tools necessary to do this technical portion of nuclear fire planning: a circular map scale, a map of the target area, a compass (for drawing arcs), a straight edge, a pocket calculator and the tables and graphs.[27] The analysis done with these tools is crude and cannot factor in variables such as terrain, but it is sufficient for the rough information the corps needs for target nomination.

How the Corps Currently Operate

At the time of this writing, the Army has four corps: I Corps, III Corps, V Corps, and XVIII Airborne Corps. At my request, Concepts and Doctrine Division of the U.S. Army Command and General Staff College sent each corps a set of questions on corps nuclear target planning written by Mr. David Turek (found in Appendix B). These questions enabled this study to expand beyond doctrine to examine how corps staffs envision themselves planning nuclear targets. The corps' answers provide a check on the preceding doctrinally based analysis, reflect the nonuniformity of corps concepts and structure, reflect the responding corps' interpretation of their responsibilities, and provide a

glimpse of the level of corps interest and commitment in training for nuclear target nomination.

The questionnaire posed fourteen questions that involved several aspects of nuclear target planning. The first two questions asked who does nuclear planning and where do they do it. Answers to the next three questions reflected the corps' interpretation of its responsibilities. The sixth, seventh, and eighth questions asked about the communications used for nuclear planning. The next two questions examined senior leader involvement in the process. The last four questions asked about particular details of non-strategic nuclear planning affected by the elimination of nuclear artillery: interaction with the Navy, division level involvement, the possible modification of air interdiction procedures for nuclear missions, and appropriate types of targets.

When and Where the Corps do Nuclear Target Planning

Although the corps varied in their approaches to planning nuclear fires, they agreed that target planning would be led by a targeting team, the same element that shapes the conventional fire support effort.

To support the targeting team for nuclear planning, I Corps adds the services of the Nuclear Weapons Employment Officer, the Nuclear Effects off and one non-commissioned officer to do the technical target analysis

rather than target analysts. A G3 Plans Officer is included to integrate nuclear fires into the overall corps concept of support. The Nuclear Effects Officer is no longer authorized on the TO&E according to the proponent (manager) of the Nuclear Research and Operations Officer specialty (functional area 52). The I Corps targeting team is chaired by the Corps Artillery commander.

I Corps further identified a Nuclear Planning Cell within G3 Plans consisting of, as a minimum, the technical planners (identified earlier as part of G3 Operations), a Fire Support Element representative, and a G3 Plans Officer. This organization as well as the targeting team organization are described in terms of the peacetime organization rather than the functional cells described in *FM 100-15-1*. With I Corps Artillery being an element of the Utah National Guard and I Corps headquarters being located at Fort Lewis, Washington, practicing this concept is difficult at best. What is clear, however, is that I Corps recognizes the expertise required from the Fire Support Cell, the Plans Cell, the Operations Cell, and the Corps Artillery, and has a well defined system for nuclear planning. That system does not, however, integrate interservice expertise nor does it request sister service assistance.

XVIII Airborne Corps, in contrast, did address nuclear planning in terms of cells and was more attuned to interservice liaison. Like I Corps, they identified the

Corps Targeting Board as responsible for nuclear fire planning. However, they added the Fire Support Cell, Air Force and Navy liaison, and Joint Task Force liaison. Technical analysis was not specifically addressed except that the Corps NBC Section could possibly provide a planner/analyst to the targeting board.

Breadth of Corps Responsibilities

I Corps deferred the delineation of its planning responsibilities to its higher headquarters. This answer is technically correct if not helpful. The corps' answer to the fifth question (expected guidance from higher headquarters) was illuminating. The general guidance which they expect includes protection of combatants and non-combatants, suitable targets, areas excluded from targeting, procedures to cancel or update targets, and specific communications channels to use. They seem to expect maximal guidance which implies a need for minimal corps expertise.

XVIII Airborne Corps is most concerned with the impact of nuclear strikes on all aspects of future operations. The Corps sees this as its major responsibility. Additionally, it will include the information in target nominations necessary for its higher headquarters to assess the impact of launching or failing to launch a nuclear strike. In responding to the question on guidance expected from higher headquarters, XVIII Airborne Corps

answered only as a JTF with nuclear release, which is beyond the scope of this thesis.

Communications

Communications requirements include both hardware and organization. No corps identified problems with the availability of communications systems to support nuclear planning. The corps identified organizations and systems to expedite real time intelligence, but did not evaluate them.

The Air Force is accessible through both the Air Support Operations Center (ASOC) and the Battle Coordination Element (BCE). The Naval and Amphibious Liaison Element (NALE) was not, however, mentioned by either I Corps or XVIII Airborne Corps as a means to interact with the Navy. I Corps plans to use the BCE as a link to naval air support, and XVIII Airborne Corps plans to use the Joint Target Coordination Board. This lack of liaison could invite real problems for ground use of naval air delivered nuclear bombs or Tomahawk cruise missiles.

Types of Targets Expected

The nuclear oriented staff, procedures, equipment, and training that a corps deems necessary depend somewhat on what types of targets it would nominate. The target type tells the corps something about the intelligence needed to support the nomination, the requirement to track and update the target, and the nature of corps operations following the

nuclear strike. The types of targets it expects to nominate also reveal the corps' understanding of nuclear doctrine and guidance from higher headquarters.

I Corps anticipates targets similar to those in the era of nuclear artillery: large troop concentrations, high level command posts, and large logistics sites. These are deep battle targets with both tactical and operational significance that were common nuclear artillery targets. In addition to these, XVIII Airborne Corps identifies some target categories usually associated with air interdiction: hardened military facilities; military manufacturing, production, and storage facilities; and enemy nuclear delivery facilities. I Corps mentioned tying its target selection to the well-known tactical criteria of mission, enemy, terrain and weather, troops, and time available. The impact of nuclear weapons at the operational and strategic levels of war does not emerge as a consideration.

Personnel and Equipment in the BCE and Joint Staff

As discussed in Chapter Three, corps requirements for nuclear fire planning depend on how independently higher headquarters are able to plan and how well higher headquarters can integrate a nuclear strike with ground combat. The Battlefield Coordination Element (BCE) is an army liaison element to the air operations center (AOC). It is the Air Component Commander's key interface with ground

combat and likewise serves the corps as an information source on air operations. A corps may serve under an Army commander (Army used here as an echelon of command), a Land Component Commander, or a Joint Task Force Commander. Any or all of these organizations may have expertise that reduces the need for corps expertise. In this subsection I examine that possibility.

The BCE is not organized with any nuclear trained personnel, so it is not currently staffed for such a role.[28] It is physically removed from the corps headquarters. Although it stays abreast of corps operations, it is bound to be less informed than corps staff elements. If BCE personnel were to go to the corps commander to assist planning, they would be unable to maintain their liaison mission. From my perspective, the decision not to use the BCE as a nuclear planning cell is wise.

The biggest problems with assuming higher headquarters will take the lead in nuclear target nomination are that higher army tactical/operational echelons do not exist in peacetime (except Third Army) and that joint headquarters are too far removed from corps operations. Personnel from outside the corps (STRATCOM or USANCA, for example) could integrate into the staff in wartime, but they would be unfamiliar with corps staff operations and plans, and would take time to become part of the team. The same

problem exists with building expertise at Third Army and then detaching experts when Third Army is not deployed.

If non-strategic nuclear weapons are to be exploited by ground operations, it is desirable that enough expertise be present in the corps for effective target nomination.

Nuclear Training in Army Schools

Since non-strategic nuclear strikes broadly affect operations, and will usually be central to operations in which they are used, a broad base of knowledge on nuclear operations is necessary throughout the planning staff. This is one of the lessons from Chapter Three. An understanding of nuclear effects and concepts for exploitation can pay off in intelligence gathering, operational planning, logistics and medical planning, and nuclear targeting. An understanding of how the use of nuclear weapons impacts on war termination strategy can synchronize the corps' tactical and operational focus with the joint force commander's operational and strategic focus.

The level of staff preparedness described above is not found in today's Army. The nuclear focus of officer training schools in the Army has almost vanished. The nuclear option has been purposely downplayed since the United States has no intention of using nuclear weapons if it can possibly be avoided. Without the Soviet threat, this goal appears achievable for the foreseeable future, but we

are notoriously poor prophets. With the further elimination of nuclear artillery, many, if not most, officers assume that the Army has no role in nuclear targeting.[29] Having read this far into this thesis, you know this is untrue.

The branch schools most involved with nuclear targeting, field artillery branch with the mission of coordinating all means of fire support, and the chemical corps with force protection responsibilities, have lost their focus. The field artillery school limits nuclear training to force protection in its basic and advanced courses.[30] The chemical school teaches nuclear target analysis in its advanced course, but copies the curriculum of NCTAC, which has not been updated to adequately consider sister service delivered nuclear weapons.[31]

Even more important is the general doctrine training that occurs in all the branch schools, in the Command and General Staff College, and in the War College. In none of these schools is offensive nuclear combat considered in more than cursory detail. The renowned School for Advanced Military Studies, wh is a training ground for future Army military thinkers, es the risks of crossing the nuclear threshold, but does not practice ground operations to support an American or allied nuclear strike.[32]

So in general, how the military plans to fight an overwhelming conventional force using limited nuclear strikes is not taught anywhere in the general military

educational system. Corps staffs may be thinking this issue through for the first time on the battlefield.

CHAPTER FIVE

AN EVALUATION OF THE CORPS' ABILITY TO NOMINATE NUCLEAR TARGETS

Criteria

Through the last two chapters of this thesis I have examined the nuclear planning requirements of the corps and the assets available to meet those requirements. Is the staff robust enough and sufficiently trained and equipped to nominate targets that meet the joint commander's intent and that the corps can exploit effectively? I evaluate this question in this chapter by drawing from the requirements examined in Chapter Three and summarized at it conclusion, and from my analysis of the corps assets for nuclear planning presented in Chapter Four. The standards of success are corps' capabilities consistent with the doctrine and intent expressed in documents from the National Military Strategy to corps level field manuals.

Technical Knowledge Requirements

The technical knowledge requirements for corps nuclear planning are straightforward. Specialized knowledge in nuclear and non-nuclear weapons effects and in nuclear delivery systems is the province of a few specialists:

nuclear target analysts, nuclear effects officers, nuclear employment officers, and sister service liaison officers. An evaluation of corps technical expertise reduces to determining if the corps has a sufficient number of personnel with the necessary technical expertise and determining if those personnel are sufficiently trained.

Several of the qualifications that emerged in Chapter Three as necessary for effective corps nuclear fire planning involve technical expertise. The target analysts, or whoever does the nuclear target analysis, must be able to expertly apply the nuclear targeting methodologies. They must also know the responsiveness and reliability of the non-strategic nuclear forces, conventional and smart-weapon effectiveness, nuclear effects, and sister service delivery procedures.

Nuclear target analysis techniques and nuclear effects are taught in the two week Nuclear and Chemical Target Analyst Course (NCTAC) which results in an additional skill identifier (ASI 5H). Good personnel management practices should enable the corps to assign trained personnel to analyst positions. Perhaps a mobile training team from the Field Artillery School or USANCA is an option if trained analysts are scarce. In my opinion, the best solution for keeping corps filled with trained analysts is to identify field artillery captains to take NCTAC between the Field Artillery Advanced Course and their next duty

stations. In any event, this element of training is not a problem. The two analyst positions authorized per corps appear to be sufficient.

The problem with the analysts is that they are not trained in the other important areas identified in Chapter Three. These other areas involve knowledge of sister service capabilities, reliability and responsiveness of non-strategic nuclear forces, conventional and smart weapon effectiveness, and sister service nuclear delivery techniques. Without a basic knowledge of these things, the commander cannot make a fair evaluation of risks versus benefits, not just to the pilot but to the corps mission. It is best if the target analyst is a single source of technical knowledge so that he can weigh his understanding of nuclear effects against other options, but expertise in other staff members would work. Unfortunately, even the sister service liaison can not be expected to have technical knowledge in such areas as nuclear delivery techniques unless he happens to have had that type of mission.

There are two sides to this argument. STRATCOM and USANCA envision themselves as having a nuclear advisory role sometimes jokingly referred to as a 1-800 (toll-free telephone) service. Since the corps only has to nominate targets for consideration by the joint staff and higher echelons, and has no nuclear delivery capability, why does it need organic expertise beyond reading the effects tables?

In the event it has technical questions, the corps can query STRATCOM or USANCA. The problem is that when knowledge is compartmentalized, the potential for mistakes is magnified. Corps could lose the satellite link. The target could move and corps could be unsure how much flexibility it has to slip the time or reorient the strike. Perhaps corps does not pass up information that explains why a nuclear weapon is needed instead of a smart bomb because corps has no smart bomb experts. If a nuclear weapon is used in the corps area of operations, details of how the strike will take place can be important in unpredictable ways.

I find the technical training level within the corps to be marginally deficient because analysts lack expertise in sister service nuclear operations.

Tactical Knowledge Requirements

In addition to the scientific and technical aspects of nuclear weapons and their delivery platforms, the corps staff must know how to use and exploit nuclear weapons and how to protect the command from nuclear weapons. Tactical competence affects a much wider range of decisions than the technical expertise just studied, so it cannot be limited to a few experts. This competence is not merely a theoretical understanding of nuclear warfare, but includes a practical understanding of the systems that make it possible. The

elements of this expertise emerged from the analysis of Chapter Three, and are reiterated below.

Commanders and nuclear staff planners must understand national level political guidance on non-strategic nuclear weapons and must understand the theory of limited nuclear strikes and controlled escalation. Without such an understanding, the corps will nominate inappropriate targets. The extreme political sensitivity of nuclear operations necessitates a strategic sensibility in an essentially operational/tactical corps staff.

Nuclear planners at the corps level need to understand joint plans and the Joint Operations Planning and Execution System (JOPES), since nuclear planning will occur in that context. They must consider the operational level questions that impact nuclear operations and that nuclear operations impact (Dr. Metz's list is found on pages 44 and 45).

In order for nuclear operations to be successful in achieving corps tactical and operational aims, nuclear planners must understand air interdiction, deep battle, and targeting in addition to the technical aspects of air delivery or nuclear cruise missiles. These demands support the option of centralizing nuclear target planning in the fire support cell of the corps main CP since it is central in controlling deep battle. If nuclear weapons are used at all, it will most likely be deep. The interservice liaison

personnel, especially the ASOC, should be trained by their services to provide the necessary technical and tactical expertise concerning nuclear delivery by their particular service. That the bulk of interservice coordination occurs in the fire support cell is yet another reason for it to dominate nuclear target planning.

The corps is unlikely to find the depth of operational knowledge just described except in officers that have completed the Command and General Staff College (CGSC, resident or non-resident). The nuclear weapons officer in the plans cell, with the authorized grade of lieutenant colonel, is likely to be fairly competent in the necessary skills. Most of the majors and nearly all of the officers above that rank meet many of the competencies described above. CGSC emphasizes the operational level of war and teaches JOPES and strategic planning. Deep battle, air interdiction, and targeting are generally understood by CGSC graduates, and are well understood by most fire support officers and operations officers. With the help of interservice liaison, the understanding of these areas of combat, which apply both to nuclear and conventional operations, should be adequate.

A shortfall occurs, however, in the level of corps command and staff training to apply joint and Army doctrine to nuclear operations. Because there is so little nuclear doctrine in the primary doctrinal manuals, and almost no

study of nuclear operations in the Army school system, the corps staff has not thought through the nuclear environment. Operations planners have not considered the opportunities and limitations for fire and maneuver if a critical portion of an enemy division is devastated by a nuclear blast. Staffs are generally unprepared to make an educated comparison of a conventional versus nuclear strike. Intelligence officers have not thought through how they might track an expansive mobile reserve that may be appropriate for a nuclear strike. Medical officers have not prepared themselves for the medical challenges caused by radiation sickness. Psychological operations and civil affairs units have not thought through their enormous responsibilities once the American military has used a nuclear weapon.

Much of this shortcoming in general nuclear education can be remedied by integrating the new *FM 100-30, Nuclear Operations* into service school curricula at whatever levels doctrine is taught. The concept of how the armed forces would fight nuclear need not be involved nor time intensive. Given the general concepts for nuclear operations, staff officers could develop expertise on the job by occasionally integrating nuclear scenarios in CPXs. I do not propose nuclear training be integrated into even a majority of exercises, but just enough to orient decision makers to the right considerations and references. A

nuclear strike is unlikely, but also too important an option to ignore.

Operational and strategic preparedness is even more important in the senior leadership than in the general field grade officer population. Senior leaders could be called on to make suggestions and decisions about nuclear targets that require a mature understanding of the unique political and military aspects of a nuclear strike. For this reason it is critical that the War College devote time to educating its students on the place of nuclear weapons in the national military strategy and how the armed force conceivably might use them.

Communications Requirements

For effective nuclear planning, corps need the ability to exchange information with those responsible for delivery of nuclear weapons. This is not to imply that there needs to be a direct link from the corps main CP to ships with nuclear cruise missiles or airstrips where nuclear bombs are loaded, but that there must be some viable channel to pass information and answer questions. Whether a channel is viable or not depends on how fast the planning and executing units need information versus how quickly and how reliably the channel passes information.

Nuclear planning interfaces between the Army and its sister services were examined in Chapter Three. The primary

Army-Air Force nuclear interface is the Battlefield Coordination Element (BCE) and the primary Army-Navy interfaces are the Naval and Amphibious Liaison Element (NALE) and the Naval Liaison Officer (NLO). The role of the BCE is well understood by the corps that answered the questionnaire, but the naval liaison is not. This is to be expected since the NALE is located at the air operations center (Air Force) and is primarily an Air Force-Navy liaison, while the NLO is neither standard in peacetime nor likely to have nuclear expertise.

The sister service liaison located at the corps, although probably not nuclear experts, has some potential value. This is especially true of the Navy interface since liaison is so limited. Sister service liaison includes the Air Support Operations Center (ASOC) and the Tactical Air Control Party (TACP) from the Air Force, and the NLO and marine liaison officer from the naval services.

The corps TACP is the focal point for coordinating air support at the corps while the ASOC provides communications links to the AOC. Both organizations, being staffed by airmen, have at least some expertise on air force doctrine and capabilities, and technical expertise on bombs. Some of this expertise may extend to naval air. The ASOC has communications with the AOC and is an alternate to the BCE as a conduit of nuclear information, although the ASOC usually focuses on directing the corps close air support

effort. Between the BCE and the ASOC, Army-Air Force liaison is well established and well staffed. This organization could potentially provide valuable assistance in nuclear planning.

I see three ways to maximize the Army-Air Force link for nuclear planning. The first is for the Air Force to provide an officer with nuclear expertise to the ASOC. This is the most resource intensive option, but it provides the corps commander the best support. The second is for one or more of the Air Force officers assigned to the corps to receive instruction and references on nuclear operations. This intermediate option would focus the nuclear support responsibility of the Air Force and energize joint nuclear planning. A third option is to provide the corps with references for nuclear employment that address Air Force and naval delivery systems in detail. Writing such references should probably be a joint responsibility. This final option requires modest resources, but likewise does little to focus appropriate corps staff responsibilities.

Some level of nuclear delivery expertise can, under the current setup, be passed from the AOC to the corps through the BCE. The current BCE has no nuclear expertise and is physically separated from the corps headquarters. This is an awkward way to coordinate nuclear support of the corps; the more expertise available at the corps, be it

human or written, the less the corps will need to rely on the BCE.

Naval liaison for nuclear planning is more problematic. For naval air delivery of nuclear bombs, interaction of the NALE and the BCE at the AOC could do much to synchronize nuclear strikes with the ground effort. Again the problem is nuclear delivery expertise at the corps main CP. If Air Force and Navy nuclear delivery concepts and aircraft are reasonably similar, perhaps the ASOC/TACP could provide the corps expertise for both services. Perhaps the best solution to this problem is to avoid it; prefer Air Force to Navy platforms for nuclear gravity bombs. In any case, integrating naval air and cruise missiles into the nuclear references recommended for the Air Force could only improve corps planning abilities.

Internal to the corps, the fire support cell has adequate communications equipment and interfaces with key agencies to effectively coordinate nuclear planning. As was illustrated in Chapter Three, the functions of targeting and fire support coordination largely overlap the requirements of nuclear target planning. The regular interface of the fire support cell with the operations, plans, and intelligence cells as well as the sister services likewise supports nuclear planning. The standardization of the targeting team concept within the existing corps ensures the senior leader direction and guidance needed in nuclear

planning, since the targeting team includes the commander, G3, G2, and corps artillery commander.

So, overall, the corps has adequate communications equipment to effectively nominate appropriate nuclear targets and exploit the effects. The corps does not, however, have adequate information readily available on sister service nuclear weapon delivery, which should, in some form, be provided by the nuclear delivery services.

Manning Requirements

The number of personnel assigned to corps headquarters with a responsibility for nuclear planning does not appear to be a problem. The technical analysis is not time intensive; the two target analysts or any two personnel trained in nuclear target analysis should be adequate. Much of the target analysis that goes towards nominating a nuclear target is done as a matter of course in the fire support cell as targets are considered for engagement by fires or electronic warfare.

The tactical/operational skills needed for corps nuclear planning are general skills that should be a part of the officer education system; the entire staff should be able to adapt to a potentially nuclear environment. Nuclear effects experts trained beyond the NCTAC level are not absolutely necessary at the corps level. The best situation would be for each corps to have an officer with functional

area 52 (nuclear research and operations) expertise who is a CGSC graduate and who performs another function most of the time. It would also be wise for the corps to seek detailed nuclear effects advise from echelons above corps, STRATCOM, or USANCA in the unlikely event that it was needed.

Doctrine Requirements

A corps is more likely to nominate effective nuclear targets if well guided by joint and Army doctrine. Doctrine represents the collective opinion of subject area experts on how the armed forces should think about fighting. In principle, doctrinal manuals should contain more wisdom than is available on the corps staff. The corps staff tries to apply that wisdom along with its collective judgment to the situation at hand. Doctrine also creates unity of purpose among elements that do not or cannot communicate.

Unfortunately, the principal Army operations manuals for the corps, *FM 100-5* and *FM 100-15*, tell the corps very little about how to think about fighting with non-strategic nuclear weapons. The joint manual on employment of non-strategic nuclear weapons, *Joint Pub 3-12.1*, likewise does not convey a clear vision for employment of non-strategic nuclear weapons in a corps area of operations. No matter what level of detail is included in other manuals, the shortcomings in these manuals are serious. The two Army operations manuals listed above are

probably the two most widely read by the corps staff. The joint manual on non-strategic nuclear weapons (which is not yet approved and in circulation) is the basis for interservice coordination of joint nuclear fires.

FM 100-30, Nuclear Operations, will greatly improve the nuclear doctrine available for the corps once it is published. This manual adapts the Army's operational framework to nuclear operations. It discusses nuclear operations in terms of the principles of war and the tenets of army operations. It covers nuclear operations from the joint level through division level. It discusses battlefield functions from a nuclear perspective to include an entire chapter on logistics. And probably most important from a corps nuclear planner's perspective, it discusses how to exploit the capabilities of non-strategic nuclear weapons for the five forms of maneuver and all forms of the offense and defense.

The initial draft of *FM 100-30* fails, however, to provide the corps staff with sufficient detail on how to get sister service delivery expertise and on the execution of sister service nuclear missions. Time guidelines for planning and execution, delineation of authority between services, and a point of contact that corps can consult on delivery platform capabilities are missing. The manual does not address how the corps should pass intelligence or updated target information, nor what degree of control the

corps commander will have over an approved mission in his area of operations. These are not details best left for a crisis.

Two other sources of doctrine that need to address sister service nuclear delivery are the *FM 6-20* series of fire support manuals and sister service reference manuals for liaison officers. The field artillery has long boasted that in nuclear operations the scheme of maneuver may very well support fires. The field artillery branch should ensure that it is fully prepared to execute its fire support responsibilities with respect to sister service delivered nuclear weapons; the procedures should be covered in detail in the main body of *FM 6-20-30*, and the branch's role in coordinating nuclear fires should be stressed. Likewise, the sister services should recognize their responsibility to provide Army corps with the necessary doctrine and liaison to effectively coordinate nuclear strikes and ground operations.

Decision Aids Needed

Decision aids are, for the purpose of this thesis, any tools that enhance decision making, excluding doctrine or human resources. For example, decision aids include computers, charts, checklists, and tables of data. Appropriate decision aids could presumably enhance nuclear planning.

Some of the problem areas identified in this thesis might benefit from decision aids. Where knowledge in certain areas of nuclear operations is lacking, appropriate decision aids can, to some degree, substitute in a manner much like a scientist uses references as a substitute for detailed memorization. I do not pretend that the following suggestions are a panacea. While there are probably much better ideas, these are presented as a partial solution to reducing the differences between what the corps staff should know and what it does know.

The corps staff needs to consider the operational questions posed by Dr. Metz and presented in Chapter Three of this thesis. His list of questions is worthy of consideration in writing nuclear doctrine, but could also be useful as a checklist of considerations for the corps nuclear planner. This checklist could be a decision aid that helps elevate the planner's thinking to the considerations necessary for nuclear effects.

The timelines for nuclear target nomination and execution are critical to the planning process. A chart that could be posted in the corps staff cells could help to standardize this timeline.

Since non-strategic nuclear weapons have never been used in combat, the Army could use the results of war games (simulations) to determine threat centers of gravity that are vulnerable to nuclear effects and how they can be

exploited. The results could be passed to appropriate operational and tactical staffs as decision aids. If such a plan is feasible, it could somewhat substitute for experience.

One final candidate for a decision aid is a set of plastic disks that can overlay a map to show the radii of the various nuclear effects. The corps commander and staff could then rapidly visualize the potential effects of nuclear weapons of specified yield. A simple device like this means that the staff does not have to wait for a nuclear analyst to get a general idea of nuclear effects.

Nuclear Target Analysis Tools Needed

At the corps, only a rough nuclear target analysis is necessary, since its only purpose is to aid in the target nomination process. Once the Joint Target Coordination Board approves a nuclear target, the service that is to deliver the weapon does the detailed weaponeering. Whatever system the corps uses for its target analysis should be quick and simple, since the corps will not want to use excessive planning time nor does it have time for extensive technical nuclear training.

The Defense Nuclear Agency (DNA) is reviewing the nuclear weaponeering methodology and has identified many ways to improve it.[1] The agency's effort to revise the weaponeering methodology is a serious scientific effort that

should result in a modern, computerized system. The corps does not need this technology to do the estimates required for target nomination, but should not summarily discard improvements.

The corps should embrace any improvements in target analysis that are at least as quick as the current one and that do not require excessive training. An ideal methodology would be cheap, quickly able to compare options, able to consider terrain and weather, user friendly, and could be self taught. Computer software should be welcome if it can be used with existing corps computers, but should not be essential to the target nomination process since computers are vulnerable to electromagnetic pulse and subject to mechanical failure.

CHAPTER SIX

CONCLUSIONS AND RECOMMENDATIONS

An Evaluation of Corps Preparedness for Nuclear Planning

Overall, the United States Army corps commander has a marginally well manned, trained, and equipped staff to nominate appropriate non-strategic nuclear targets. The fire support cell is well structured to do nuclear target planning with critical input from the other corps cells. Senior leader involvement should ensure an appropriate consideration of the political implications of a nuclear strike. The communications channels are adequate with the exception of a weak Navy link.

Three primary shortcomings, however, keep the corps staff from being more than marginally adequate. First, the Army has maintained little formal training in nuclear combat, which logically results in a corps staff deficient in both supporting the planning effort and in its ability to exploit a nuclear strike. Second, Army doctrine so neglects the nuclear option that it discourages a level of preparedness commensurate with the national military strategy. Third, the corps lacks reasonable access to

expertise on sister service nuclear delivery systems and platforms.

Strengths

The current decide, detect, deliver conventional targeting methodology that is orchestrated in the fire support cell of the corps main CP, complements the nuclear target planning process. In the decide phase of this process, planners focus appropriate intelligence collection assets on high payoff target sets and attempt to maximally support the commander's concept with the corps' limited fire support assets. The corps targeting team is thus well practiced in evaluating various intelligence sources and fire support means, and deciding among potential targets. It can also orient intelligence collection assets on tracking a target. If the targeting team accurately comprehends the physical, psychological, and political effects of a nuclear strike, it becomes another option to evaluate in the targeting process.

The targeting team doctrinally centers around the corps commander, the G3, the G2, and the corps artillery commander (corps fire support coordinator, FSCOORD). These senior leaders can provide a heightened focus on operational and strategic/political objectives. This arrangement benefits nuclear target planning, which entails operational

and strategic considerations far beyond conventional target planning.

The fire support cell, and indeed the entire corps staff, understands the importance of integrating fires and maneuver while considering logistics. This strength of the American Army stems from its doctrine and schooling system. For non-strategic nuclear fires, the importance of this integration cannot be understated. The habitual coordination among the various staff cells that is evident in the corps questionnaire responses should enhance nuclear planning. However, the near exclusion of how-to-fight nuclear concepts from primary doctrine will hurt this process. This is addressed as a shortcoming in the following section.

The corps staff is well structured for nuclear planning for several other reasons. With a small nucleus of people responsible for technical nuclear planning, all of whom have other jobs, the nuclear option remains low profile. This supports the national non-proliferation objective and does not add to an already large corps staff. Based on the questionnaires, the corps seem to recognize that their responsibilities are limited to nuclear target nomination and exploitation of effects. Thus they have not committed staff where they are unnecessary. The U.S. Army has integrated the deep battle concept into training and doctrine for the last dozen years; the corps staff

appreciates the potential of interdiction and how deep fires can affect the outcome. This is a strength in nuclear planning since the remaining nuclear platforms are most appropriate for deep battle.

Another strength is that the Army corps communicates well with the Air Force air operations center (AOC). Both the BCE and the TACP/ASOC exist for liaison. They provide sufficient interservice expertise in air support and Army operations. Unfortunately, the corps does not get the needed expertise on Air Force and Navy nuclear delivery processes through this arrangement. But the structure could support the addition of an Air Force nuclear expert, nuclear training for selected Air Force personnel assigned to the corps, or nuclear references for Air Force liaison personnel.

Shortcomings

More than anything else, if the Army wants a viable non-strategic nuclear option, it must write doctrine and conduct institutional training to develop officers with a vision for exploiting nuclear weapons. This doctrine and training must be consistent with the National Military Strategy, which describes nuclear weapons as both a nuclear deterrent and a hedge against the emergence of an overwhelming conventional (and I would add nuclear) threat. While *FM 100-30* is a good nuclear reference, a framework for

employment of sister service nuclear weapons must be included in *FM 100-5* and *FM 100-15* to be perceived as more than an issue for specialists.

What if Army doctrine and schooling do not change? In all likelihood the United States will not need nuclear weapons for the foreseeable future. Even if it does, the joint command may select targets outside of the corps area of operations. Even if nuclear weapons are used in the corps area of operations, further ground combat may not be necessary. So it is unlikely that a corps will be asked to select nuclear targets and effectively exploit the effects on those targets. But it is not hard to visualize a situation where such expertise would be critical. For that contingency, the corps must be prepared.

From personal discussions, I can verify that few officers at the Command and General Staff College have a concept of nuclear operations. Any other state of affairs would be surprising, since the basic Army operational doctrine includes very little on nuclear operations, and the school teaches more about sexual harassment than nuclear operations. And CGSC graduates generally represent the best trained officers on the corps staff.

Unless catalyzed by someone with a vision for potential nuclear operations, the corps staff will have little basis on which to plan, either deliberately or in a crisis. The various staff cells will not achieve unity of

purpose, and are bound to overlook some of their responsibilities. The corps staff will have to learn its job the hard way.

A further reason for improving nuclear training in Army schools is to prepare officers to serve on JTF and land component command staffs. Both of these levels of command can befall a corps staff, albeit usually with augmentation.

The third primary shortcoming, in addition to training and doctrine, is that sufficient expertise is not available to the corps on sister service nuclear delivery. The corps does not need a detailed understanding of mission execution, but it does need information to weigh the options and to solve unexpected problems. The lack of Air Force expertise might be solved by adding a nuclear liaison officer, training the existing liaison personnel on nuclear coordination, or providing the Air Force liaison personnel with references. Naval air and cruise missile expertise is a tougher problem that might be solved through a liaison officer or through Air Force liaison.

Minor changes, noted earlier, to the Nuclear and Chemical Target Analyst Course (NCTAC) and *FM 100-30* could also enhance nuclear preparedness. NCTAC needs to train its students on sister service nuclear delivery and the operational considerations for nuclear weapon employment. *FM 100-30* needs to specifically address the delineation of authority between services, time-lines for the nomination

and execution process, and sources of sister service nuclear delivery expertise. The same information should also be in the fire support manuals (*FM 6-20* series).

Recommendations

The Army has many options to better equip the corps staff for nuclear target nomination and exploitation. The central decision is whether the country needs such expertise. The current Army operations (as opposed to nuclear) doctrine and training are consistent with non-strategic nuclear strikes outside of the corps' areas of interest. No corps staff nuclear expertise is needed in that case. Joint and Army nuclear doctrine, however, include corps target nominations and corps operations that take advantage of nuclear strikes. These are skills that demand a higher commitment level on the part of the Army than currently exists. There is what Joseph S. Howard II calls a declaratory versus operational gap (what the Army says it can do versus what it really can do).[1]

Since Army leadership remains committed to an Army role in non-strategic nuclear employment, it follows that the nuclear training and doctrine gaps should be closed. A clear concept of how the Army should plan for and exploit nuclear effects should be included in *FM 100-5*, *FM 100-15*, *FM 100-30*, and the *FM 6-20* series. Army schools should teach nuclear operations whenever and wherever Army

operations are taught. I would estimate that the Command and General Staff College could achieve an acceptable level of proficiency with perhaps six hours of instruction plus one planning exercise with non-strategic nuclear weapons. The War College should include a larger block of instruction because its graduates will ultimately be responsible for approving or disapproving nuclear concepts.

The premier training event for corps staffs is the Battle Command Training Program (BCTP), in which the corps participates in a sophisticated war game. At least some of the rotations should include nuclear strikes. Lessons learned could be used to update doctrine.

The corps staff might better understand when and how to plan for nuclear weapons if it had potential nuclear scenarios agreed on by the combatant commanders. With such scenarios they could go through some of the planning process and would have a standard against which to construct command post exercise (CPX) scenarios. The nuclear scenarios could also be war-gamed in simulators to better understand the nuclear environment. This type of tool could energize the staff to take the nuclear option seriously.

USANCA could improve nuclear planning by publishing standards and conducting assistance visits. The standards would help focus the corps on what must be done to have effective nuclear planning. The visits would give the

commander and staff principals feedback through which they could improve their capabilities.

To enhance technical expertise, I recommend that the Field Artillery School and Chemical School both teach nuclear targeting in their basic and advanced courses. The field artillery could integrate nuclear targeting with conventional targeting, which in my experience has been undertrained. Nuclear targeting training could enhance a chemical officer's primary expertise in force protection. The chemical officer is well suited from a technical standpoint for evaluating nuclear effects because of the scientific orientation of the chemical corps.

Because of the operational considerations in nuclear target planning, the corps should be authorized a NCTAC trained CGSC graduate (MEL 4). This is preferable to having a junior captain who can do the analysis but needs someone to give him the options. An understanding of the analysis procedure enhances the ability of a planner to recommend options.

Lastly, I recommend that the Air Force and Navy take some responsibility for nuclear liaison with the corps. If non-strategic nuclear operations occur in the corps area of operations, the corps commander is the supported commander. The existence of the target nomination process is de facto evidence that this is an option. At the very least, the Air Force and Navy should write liaison officer manuals for the

nuclear advisor role. Other options for improved liaison were covered earlier.

Suggestions for Further Research

There are many interesting collateral issues on the subject of corps nomination of non-strategic nuclear targets. The ones I feel are most important were covered in Chapter Two under the heading *Issues Not Explored.* When is a nuclear weapon more appropriate than conventional weapons? How should weaponeering adapt to changing technology? What is the appropriate level of command for target nomination? How well do corps staffs understand nuclear planning? All of these issues are somewhat involved for a master's thesis.

The rapid changes in Army nuclear doctrine suggest some historical topics. It could be enlightening to study the sources of this turmoil, perhaps as reflected in the command levels designated to employ nuclear weapons. A study on the changing emphasis of nuclear thought in Army doctrine could shed light on the forces that shape doctrine. The demise of nuclear artillery would make interesting reading.

Summary

In this thesis, I have examined how well equipped, trained, and structured the corps staff is to nominate appropriate non-strategic targets. By appropriate, I meant that the targets should accomplish the mission, be consistent with doctrine, and that the corps be able to effectively exploit them.

I examined doctrine ranging from the National Military Strategy to corps field manuals to determine just what would constitute good target nominations. I also looked outside of doctrine to better understand the nuclear environment that the corps must understand. From this, I constructed a list of characteristics desirable in the corps staff from a target nomination perspective. An important element became that the corps staff consider all aspects of exploiting the recommended strike.

Next I examined the corps staff itself, first from doctrine and then through a questionnaire. Through this examination, I determined the capabilities of the corps for nuclear planning. Technical nuclear training and general army schooling were both considered for their impact on corps preparedness for nuclear planning.

With an understanding of the corps staff and what constitutes good nuclear target nomination, I was able to evaluate the corps staff as nuclear planners. Several strengths became apparent along with several weaknesses, the primary ones being nuclear training, operational doctrine, and sister service liaison. Overall, I evaluated the current situation as marginally adequate and made some suggestions to remedy the shortcomings.

I hope that this study stimulates some thought, especially among those empowered to affect operational doctrine. The family of Total Army personnel in the nuclear

field is small, and I talked with many while doing this research. Through what I have learned, I hope to enrich that group of people who make a major impact on Army nuclear doctrine. At the very least, the study has educated me for further service as a Nuclear Research and Operations Officer.

APPENDIX A

CORPS AND DIVISION NUCLEAR WARFIGHTING TASKS

These lists from an early, unedited draft of *FM 100-30* provide a useful summary of nuclear requirements.

Corps Nuclear Warfighting Tasks

- actions upon receipt of controls and constraints
- conduct nuclear planning
- commander states intent to nominate NSNW
- G2 provides intelligence to nuclear planners
- G3/FSE nominate targets
- G3/FSE integrate nuclear with conventional
- G3 interfaces with BCE
- G3 plans force protection
- G5 develops preclusion data
- NBCC does vulnerability analysis and actions STRIKEWARN messages
- Corps conducts NBC defense

Division Nuclear Warfighting Tasks

- G3 plans force protection
- NBCC does vulnerability analysis
- NBCC actions STRIKEWARN
- Division conducts NBC defense

APPENDIX B

CORPS QUESTIONNAIRE RESPONSES

A questionnaire of fourteen questions was mailed to each of the corps by the Concepts and Doctrine Division, Command and General Staff College. Two corps responded, I Corps and XVIII Airborne Corps. Their answers are given below, verbatim.

1. WHO IN THE CORPS WILL BE RESPONSIBLE FOR NUCLEAR FIRE PLANNING?

I Corps

a. The G3, based on staff input and upon approval by the CG, will specify <u>when and/or under what conditions</u> the Corps will request employment of nuclear weapons.

b. The Corps Targeting Team (CTT), composed of representatives from the G3 and all relevant staff sections, will specify, upon approval of the CG, the <u>category(s)</u> of targets, and the <u>specific</u> targets, against which the Corps will request the employment of nuclear weapons.

c. The CTT, upon approval by the CG, will specify the effects desired on target, restrictions on target

damage and degree(s) of protection to friendly forces and non-combatants/civilians.

d. The Corps Nuclear Weapons Employment Officer (NWEO) and the Nuclear Effects Officer (NEO), both part of G3 Operations, based on preceding decisions and upon approval by the CG, will, assisted by the FSE, specify what type or types of weapons will be requested.

e. The NWEO and NEO will then calculate the effects of the weapon(s) selected on the specified target(s). Paragraphs d. and e. will be refined/redone until the CG's parameters are met, or until it is determined that the parameters are not attainable and therefore new guidance must be obtained.

f. G3 Plans will ensure that all nuclear fires and fire planning are integrated into the overall Corps concept of support.

XVIII Airborne Corps

Corps Fire Support Cell, Corps Targeting Board, Air Force and Navy Liaison, JTF Liaison. As the ARFOR HQ, we will only evaluate and nominate target locations to the JTF HQ. Our primary planning will be evaluating the impact on future operations in the Corps area.

2. WHERE WILL THE NUCLEAR PLANNERS BE LOCATED AND IN WHAT NUMBERS?

I Corps

a. The CTT has a nucleus of 3-5 personnel on duty 24 hours per day working within the Main FSE (part of the Corps Main CP). Formal CTT meetings occur daily within the Battlefield Control Center (BCC) in the Main CP. The CTT consists of rep's from all relevant staff sections and rep's from major subordinate commands (as necessary). CTT meetings are chaired by the Corps Artillery Commander.

b. The NWEO and NEO are located within G3 Operations and attend relevant CTT meetings. The NWEO and NEO are assisted by one (1) NCO.

c. A planner out of the G3 Plans shop will be integrated into all nuclear fire planning.

d. The actions specified in paragraphs 1.d and 1.e above will take place within G3 Plans: at a minimum, the NWEO, NEO, an FSE rep and a G3 Planner will form a Nuclear Planning Cell (NPC) within Plans.

XVIII Airborne Corps

The Corps NBC Section may be able to provide a planner/analyst officer (03/04) to the Corps targeting board. This individual will be located at the Corps Main CP.

WILL THEY BE IN THE DEEP OPERATIONS SECTION?

I Corps

a. The mission of the CTT is to transform the Corps Commander's deep operations intent into a deep operations plan of action. The Corps does not have a distinct Deep Operations Section. Locations of NPC, CTT, NWEO and NEO are per discussion above.

b. If a Corps' request for a nuclear strike is approved, the NWEO and NEO will form the core of a Nuclear Execution Cell (NEC) within G3 Operations.

XVIII Airborne Corps: [Answer provided above, No]

WILL CORPS ARTILLERY AND CORPS BE CO-LOCATED?

I Corps: No.

XVIII Airborne Corps: [Unanswered]

3. WHAT INTERACTION OCCURS BETWEEN CORPS AND JFLC LEVELS?

I Corps

a. The CJTF will specify the command relationship between JFLC and I Corps.

b. The Corps will send a liaison team to JFLC headquarters.

c. Information and intelligence flow will occur commensurate with the specified command relationship.

XVIII Airborne Corps

Analysis of future operations, terrain management, Corps Deep Battle Plan, and personnel radiation exposure.

4. WHAT LEVEL OF PLANNING IS FORESEEN AT CORPS LEVEL?

I Corps: See answer to 1 above.

XVIII Airborne Corps

Analysis of impact on future operations by all levels of corps' forces to include command, control, and communications, movement control, terrain management, downwind hazard areas, and impact on medical concerns.

WHAT WILL TARGET NOMINATIONS INCLUDE?

I Corps

a. All required items on any standardized request format.

b. At a minimum; (1) Type of weapon requested. (2) Effects desired. (3) Protection for friendly forces and non-combatants. (4) Time/time window required for target engagement.

XVIII Airborne Corps

Target nominations should include description, location, military significance, impact on future operations, impact if not targeted, and window of opportunity.

5. WHAT KIND OF GUIDANCE (I.E. CONTROLS AND CONSTRAINTS) DOES CORPS EXPECT TO SEE FROM HIGHER HEADQUARTERS?

I Corps

a. Prior to any Corps request for nuclear weapons employment, general guidance such as: (1) Protection required for non-combatants. (2) Protection required for

friendly forces. (3) List of targets/sites excluded from nuclear strikes. (4) List of targets suitable for nuclear strikes. (5) Lead time for nuclear strike requests. (6) The abort/cancellation procedures for any approved strike in the process of being executed. (7) Target update procedures for approved strikes in the process of being executed. (8) Expected time from request to approval/denial of strike.

b. Once a request has been approved and is being processed for execution: (1) Specific communication channels and agencies to link into form strike approval to execution to after-strike assessment(s).

XVIII Airborne Corps

When operating at the JTF level, with release authority, we need to know available weapons and weapon systems, weapon control status, release authority, higher HQ mission, planning, and targeting guidance. Pre-planned and designated nuclear targets.

6. WHAT COMMUNICATIONS CHANNELS ARE AVAILABLE TO PASS NUCLEAR TARGETING INFORMATION?

I Corps

a. VFMED/TACFIRE, MSE, and TA-312 link the targeting cell in the Corps' Analysis Control Element (ACE) to the Fire Support Element (FSE).

b. MSE, SATCOM, Autodin and radio feed into the Corps headquarters, including the FSE and ACE. Secure

phones on commercial phone lines can be utilized when feasible. G3 Air and ASOC communications channels (radio and phone) into the air component are readily available.

c. Preferred channels are those producing a hard copy of any message traffic.

d. Channel(s) will meet all relevant security parameters.

XVIII Airborne Corps

AM/FM Radio, SINGCARS, Single Channel/Multichannel Satellite, wire, phone. Command and Intel channels. Integration into fire support system.

7. WHERE DOES THE INTERACTION BETWEEN BCE AND CORPS OCCUR?

I Corps

a. Background (1) BCE ensures that Corps' nuclear strike requests are clearly understood by the JFACC. (2) BCE monitors the flow of any air-delivered nuclear weapons strike from request to execution to post-strike assessment(s). (3) BCE ensures the Corps is informed of all relevant information in a timely manner. (4) BCE performs standard deconfliction and synchronization tasks.

b. Interaction (1) The Corps will provide a Liaison Team to the BCE. (2) If the Corps is also the Ground Component Commander (GCC), the BCE will become subordinate to the Corps.

XVIII Airborne Corps

Primarily through STUIII telephones since the BCE is co-located with the Air Force Air Operation Center (AOC). MSE is the secondary means of communications.

8. WHAT MECHANISM IS THERE FOR PASSING INTELLIGENCE IN REAL TIME TERMS TO SUPPORT NUCLEAR EMPLOYMENT?

I Corps

a. Communication assets noted in question 6 are available.

b. The Field Artillery Intelligence Officer (FAIO) is located in the Analysis Control Element (ACE) in order to rapidly expedite the flow of target intelligence.

XVIII Airborne Corps

IGSM (Improved Ground Station Module), ASAs (All Source Analysis System), Warrior Computer.

9. WILL THE CORPS COMMANDER REQUIRE HIS APPROVAL ON TARGET NOMINATIONS? REAL TIME CONTROL OF WEAPONS IN HIS SECTOR (I.E. TERMINATION)?

I corps

Yes. The Corps commander will insist on three items: (1) The Corps commander will approve the specific times or time window for any nuclear strikes in his sector or zone, and will be linked into the planning and coordination process for any strikes affecting his sector or zone. (2) Any nuclear strike that will fall

outside of its approved time or time window must be automatically delayed until the Corps commander specifically approves the new time. (3) Communications links will be established that enable the Corps to cancel a nuclear strike at any time.

XVIII Airborne Corps

Yes. The Corps Commander (or his designated representative) must have the final approval authority on target nomination, employment constraints, and termination for all nuclear devices in the Corps Sector.

10. WILL G3 OR G2 BE INVOLVED IN THE ACTUAL TARGET NOMINATION PROCEDURES?

I Corps

Yes, per previous discussions above. Additionally, the G2 will be closely involved in target refinement using the UAV and other available resources.

XVIII Airborne Corps

Yes. The G2 and G3 play vital roles in the analysis of the courses of action for future corps operations. The "nuclear planning cell" will coordinate with the G2 to discuss the threat and the expected effect of nuclear weapons on their operations. They will coordinate with the G3 to determine planned operations and how nuclear weapons will affect the corps planning and execution cycle.

11. HOW DOES THE CORPS INTERACT WITH THE NAVY?

I Corps

a. The Corps has no Navy personnel on its staff.

b. The Corps headquarters has conducted and plans to continue conducting on-going training to increase its capability to function as a joint headquarters, to include the integration and employment of Naval forces.

c. The Corps interacts with naval aircraft through the air component headquarters via the BCE.

XVIII Airborne Corps

Through the Joint Target Coordination Board.

12. WILL THERE BE ANY REQUIREMENTS FOR INPUT FROM THE DIVISIONS?

I Corps

Their input will be requested as part of the normal CTT process of nominating targets to the Corps.

XVIII Airborne Corps

The division may nominate targets based on the analysis of their future operations. These requirements will be evaluated by the Corps' planning group to determine impact on Corps operations.

13. CAN THE AIR INTERDICTION PROCEDURES BE USED FOR NUCLEAR TARGET NOMINATIONS WITH SOME MODIFICATIONS?

I Corps: Yes.

XVIII Airborne Corps: No.

14. WHAT KIND OF TARGETS DOES THE CORPS ANTICIPATE NOMINATING FOR TARGETS?

I Corps

a. The CTT would select the nuclear High Payoff Targets based on METT-T.

b. We anticipate the targets to fall within the following general categories: (1) Large troop concentrations. (2) Selective C3 nodes (Corps and above). (3) Large logistic sites (on a very selective basis).

XVIII Airborne Corps

Hardened military facilities, massed enemy forces, major transportation avenues/centers, major military manufacturing/production/storage facilities, enemy nuclear delivery facilities.

ENDNOTES

Chapter One

[1]A. J. Bacevich, *The Pentomic Era: The U.S. Army Between Korea and Vietnam* (Washington DC: National Defense University Press, 1986), 82-87.

[2]Harriet Fast Scott and William F. Scott, *The Soviet Art of War: Doctrine, Strategy, and Tactics* (Boulder, CO: Westview Press, 1982), 289-291.

[3]Department of Defense, Chairman of the Joint Chiefs of Staff, *National Military Strategy of the United States* (Washington, DC: Government Printing Office, January 1992), 13.

[4]Department of the Army, *FM 100-15, Corps Operations* (Washington, DC: Government Printing Office, September 1989), 3-11 through 3-12 and E-0 through E-6.

[5]Gary Pettit, remarks made at the Nuclear Research and Operations Officer Course, Kirtland AFB, NM, June 1993.

[6]Department of the Army, *FM 6-20-30, Fire Support for Corps and Division Operations* (Washington, DC: Government Printing Office, 18 October 1989), 3-4 through 3-6.

[7]Department of the Air Force, *Air Force Manual 1-1, Basic Aerospace Doctrine of the United States Air Force* (Washington, DC: Government Printing Office, March 1992), 1:9.

[8]*FM 6-20-30* (1989), 2-1.

[9]Ibid., B-6.

[10]Joint Doctrine Division, Joint Staff, "Joint Pub 3-12.1, Doctrine for Joint Nonstrategic Nuclear Weapons Employment," Draft, (Washington DC: US Air Staff, 1993), GL-4.

[11]Department of Defense, Joint Doctrine Division, Joint Staff, *Joint Pub 3-12: Doctrine for Joint Nuclear Operations* (Washington, DC: Government Printing Office, 29 April 1993), III-2.

[12]"Joint Pub 3-12.1" (1993 Draft), III-13.

[13]Department of the Army, US Army Command and General Staff College, *ST 100-2, U.S. Air Force Basic Data* (Ft. Leavenworth: USACGSC, May 1993), 3-17.

[14]Ibid.

[15]Department of the Army, *FM 6-20-10, Targeting* (Washington DC: Government Printing Office, 29 March 1990), 1-1.

[16]James W. Stewart, "The U.S. Army's Search for Relevancy in the Nuclear Age" (Diss. Southwest Missouri State University, 1992), 111-112.

[17]John D. Skelton, "The Forbidden Weapon--The Employment of Army Tactical Nuclear Weapons" (Monograph, School of Advanced Military Studies, USACGSC, 1991), 23.

[18]Steven Metz, "The Operational Level of Nuclear War Fighting--Missing or Unnecessary?" *Airpower Journal*, Spring 1993, 13-20.

Chapter Two

[1]Department of the Army, *FM 100-5, Operations* (Washington, DC: Government Printing Office, 20 August 1982), 7-12.

[2]Joint Doctrine Division, Joint Staff, "Joint Pub 3-12.1 Doctrine for Joint Nonstrategic Nuclear Weapons Employment," Draft, (Washington, DC: US Air Staff, 1993), III-3.

Chapter Three

[1]Department of Defense, Chairman of the Joint Chiefs of Staff, *National Military Strategy of the United States* (Washington, DC: Government Printing Office, January 1992), 13.

[2]U.S. President, *National Security Strategy of the United States* (Washington, DC: Government Printing Office, January 1993), 14 and 16.

[3]Joint Doctrine Division, Joint Staff, *Joint Pub 3-12: Doctrine for Joint Nuclear Operations* (Washington, DC: Government Printing Office, 29 April 1993), I-5.

[4]Ibid., II-2. [5]Ibid., II-3. [6]Ibid., II-4.

[7]Ibid., II-3. [8]Ibid. [9]Ibid.

[10]Ibid., III-4.

[11]U.S. Army, Concepts and Doctrine Division, Command and General Staff College, "FM 100-30, Nuclear Operations," Initial Draft (Fort Leavenworth, KS: USACGSC, January 1994), 4-21.

[12]Ibid., 4-3 through 4-4. [13]Ibid., 4-5 through 4-7.

[14]Ibid., 4-10. [15]Ibid., 4-14. [16]Ibid., 4-16.

[17]Department of the Army, *FM 101-31-1, Nuclear Weapons Employment Doctrine and Procedures w/ change 1* (Washington, DC: Government Printing Office, January 1986 w/ change 1 dated 15 September 1989), 2.

[18]Ibid., 3. [19]Ibid., 6. [20]Ibid., 13.

[21]"FM 100-30" (Initial Draft, 1994), 4-6.

[22]Max DeSosa, telephonic interview by author, DeSosa at Langley, VA, 18 Feb 1994.

[23]John L. Romjue, *From Active Defense to Airland Battle: The Development of Army Doctrine 1973-1982*, TRADOC Historical Monograph Series (Ft. Monroe, VA: Historical Office, HQ TRADOC, 1984), 33-34.

[24]Ibid., 34-35.

[25]President, 13.

[26]Romjue, 41. [27]Ibid., 37.

[28]Department of the Army, *FM 100-5, Operations w/ change 1* (Washington, DC: Government Printing Office, 1 July 1976 w/ change 1 dated 29 April 1977), 10-8.

[29]Department of the Army, *FM 100-5, Operations* (Washington, DC: Government Printing Office, 20 August 1982), 7-11 through 7-15.

[30]Department of the Army, *FM 100-5, Operations* (Washington, DC: Government Printing Office, 5 May 1986), 45.

[31]Steven Metz, "The Operational Level of Nuclear War Fighting--Missing or Unnecessary?" *Airpower Journal*, Spring 1993, 18-19.

Chapter Four

[1]Department of the Army, *FM 101-5, Staff Organization and Operations* (Washington DC: Government Printing Office, 25 May 1984), 2-2.

[2]H. Norman Schwarzkopf with Peter Petre, *It Doesn't Take a Hero* (New York: Bantam Books, 1992), 310.

[3]U.S. Army, Concepts and Doctrine Division, Command and General Staff College, "FM 100-15-1, Corps Operations--Tactics and Techniques," Coordinating Draft (Fort Leavenworth, KS: USACGSC, September 1992), 2-158 through 2-185.

[4]Ibid., 2-48. [5]Ibid., 2-35.

[6]Department of the Army, US Army Command and General Staff College, *A304 Advanced Fires* (Fort Leavenworth: USACGSC, January 1994), 70.

[7]"FM 100-15-1" (Coordinating Draft, 1992), 2-133.

[8]Ibid., 2-44. [9]Ibid., 2-2 and 2-13.

[10]Ibid., 2-94 through 2-95. [11]Ibid., 3-13.

[12]Ibid., 2-97. [13]Ibid., 2-175.

[14]Robert Goundry, telephonic interview by author, Goundry at Joint and Combined Branch, Warfighter Division, Fort Sill, OK, January, 1994.

[15] Gary Pettit, remarks made at the Nuclear Research and Operations Officer's Course, Kirtland AFB, June 1993.

[16]Interview, Goundry, Fort Sill.

[17]Department of the Army, *FM 101-31-1, Nuclear Weapons Employment Doctrine and Procedures w/ change 1* (Washington, DC: Government Printing Office, January 1986 w/ change 1 dated 15 September 1989), 13-21.

[18]Department of the Army, *FM 6-20-10, Tactics, Techniques, and Procedures for the Targeting Process* (Washington, DC: Government Printing Office, 29 March 1990), 1-3, 1-4, 5-1.

[19]"FM 100-15-1" (Coordinating Draft, 1992), 2-66.

[20]Ibid., 2-69. [21]Ibid., 2-53. [22]Ibid., 2-163.

[23]Ibid., 2-60. [24]Ibid., 2-81.

[25]Ibid., 2-81 and 2-82.

[26]*FM 101-31-1 w/change 1* (1986, updated 1989), 18.

[27]Interview, Goundry, Fort Sill.

[28]Department of the Army, *FM 100-15, Corps Operations* (Washington DC: Government Printing Office, September 1989), F-1 through F-6.

[29]Remarks, Pettit, Kirtland AFB.

[30]Interview, Goundry, Fort Sill.

[31]Daniel H. Thomas, telephonic interview by author, Thomas at Directorate of Training, Combined Arms Department, U.S. Army Chemical School, Fort McClellan, AL, April 1994.

[32]Michael Burke and Dr. R. H. Berlin, interview by author, School of Advanced Military Studies, USACGSC, Fort Leavenworth, KS, April 1994.

Chapter Five

[1]Rob Mahoney, "Briefings from the Nuclear Weaponeering Methodology Review Seminar," (Seminar Report, Defense Nuclear Agency, 11-12 May 1993), 1-12.

Chapter Six

[1]Joseph S. Howard II, "The Future of Army Nuclear Weapons: What Role, If Any?" (Study for US Department of Energy and Department of Army, Sandia Laboratory, 1989), 1.

BIBLIOGRAPHY

Books

Bacevich, A. J. *The Pentomic Era: The U.S. Army Between Korea and Vietnam.* Washington DC: National Defense University Press, 1986.

Mataxis, Theodore C. and Seymour L. Goldberg. *Nuclear Tactics.* Harrisburg, PA: The Military Service Publishing Company, 1958.

Midgley, John J., Jr. *Deadly Illusions: Army Policy for the Nuclear Battlefield.* Boulder and London: Westview Press, Inc., 1986.

Newhouse, John. *War and Peace in the Nuclear Age.* New York: Alfred A. Knopf, 1989.

Reinhardt, G. C. and W. R. Kintner. *Atomic Weapons in Land Combat.* Harrisburg, PA: The Military Service Publishing Company, 1954.

Rose, John P. *The Evolution of U.S. Army Nuclear Doctrine, 1945-1980.* Boulder, CO: Westview Press, Inc., 1980.

Schwarzkopf, H. Norman with Peter Petre. *It Doesn't Take a Hero.* New York: Bantam Books, 1992.

Scott, Harriet Fast and William F. Scott. *The Soviet Art of War: Doctrine, Strategy, and Tactics.* Boulder, CO: Westview Press, 1982.

Periodicals and Articles

Metz, Stephen. "The Operational Level of Nuclear Warfighting--Missing or Unnecessary?" *Airpower Journal,* Spring 1993, 13-20.

Government Documents

Howard, Joseph S. II. "The Future of Army Nuclear Weapons: What Role, If Any?" Study for US Department of Energy and Department of the Army. Albuquerque: Sandia Laboratory, 1989.

National Council on Radiation Protection and Measurements. *Radiological Factors Affecting Decision Making in a Nuclear Attack, NCRP Report No. 42*. Washington, DC: NCRP Publications, 1974.

U.S. Army Combined Arms Combat Development Activity, Nuclear and Chemical Directorate. *FC 50-20, Nuclear Considerations for Operations on the Airland Battlefield*. Ft. Leavenworth: CACDA, 1 February 1984, distribution limited.

U.S., Department of the Air Force. *AF Manual 1-1, Basic Aerospace Doctrine of the United States Air Force*. 2 vols. Washington, DC: Government Printing Office, March 1992.

U.S., Department of the Army. *FM 6-20-10, Targeting*. Washington, DC: Government Printing Office, 29 March 1990.

_____. *FM 6-20-30, Fire Support for Corps and Division Operations*. Washington DC: Government Printing Office, 18 October 1989.

_____. *FM 100-5, Operations w/Change 1*. Washington, DC: Government Printing Office, 1 July 1976 w/ change 1 dated 29 April 1977.

_____. *FM 100-5, Operations*. Washington, DC: Government Printing Office, 20 August 1982.

_____. *FM 100-5, Operations*. Washington, DC: Government Printing Office, 5 May 1986.

_____. *FM 100-5, Operations*. Washington, DC: Government Printing Office, 14 June 1993.

_____. *FM 100-15, Corps Operations*. Washington, DC: Government Printing Office, September 1989.

_____. *FM 101-5, Staff Organization and Operations*. Washington, DC: Government Printing Office, 25 May 1984.

_____. *FM 101-31-1, Nuclear Weapons Employment Doctrine and Procedures w/ Change 1.* Washington, DC: Government Printing Office, January 1986 w/ change 1 dated 15 September 1989.

U.S., Department of the Army, US Army Command and General Staff College. *A304 Advanced Fires.* Fort Leavenworth, USACGSC, January 1994.

_____. *ST 100-2, U.S. Air Force Basic Data.* Fort Leavenworth, USACGSC, May 1993.

U.S., Department of Defense, Chairman of the Joint Chiefs of Staff. *National Military Strategy of the United States.* Washington, DC: Government Printing Office, January 1992.

U.S., Department of Defense, Joint Doctrine Division, Joint Staff. *Joint Pub 3-12, Doctrine for Joint Nuclear Operations.* Washington, DC: Government Printing Office. 29 April 1993.

U.S., President. *National Security Strategy of the United States.* Washington, DC: Government Printing Office, January 1993.

Unpublished Materials

Mahoney, Rob. "Briefings from the Nuclear Weaponeering Methodology Review," Seminar Report. Alexandria, VA: Defense Nuclear Agency, 11-12 May 1993.

Turek, David E. Memorandum for Chief, Concepts and Doctrine Division, USACGSC, "Review of Joint Pub 3-12.1, Doctrine for Joint Nonstrategic Nuclear Weapons Employment (Draft)." 8 July 1993.

U.S. Army, Concepts and Doctrine Division, Command and General Staff College. "FM 100-15-1, Corps Operations --Tactics and Techniques," Coordinating Draft. Fort Leavenworth, KS: USACGSC, September 1992.

_____. "FM 100-30, Nuclear Operations," Initial Draft. Fort Leavenworth, KS: USACGSC, January 1994.

U.S., Department of Defense, Joint Doctrine Division, Joint Staff. "Joint Pub 3-12.1, Doctrine for Joint Nonstrategic Nuclear Weapons Employment," Draft. Washington, DC: U.S. Air Staff, 1993.

Wright, Richard H. Memorandum for Director, Concepts and Doctrine Division, USACGSC, "Nonstrategic Nuclear Force (NSNF) Policy for the Army." 8 April 1993.

Wright, Richard H. and David E. Turek. *Nonstrategic Nuclear Weapons Employment in Support of the Army.* Fort Leavenworth, KS: Concepts and Doctrine Directorate, Command and General Staff College, 1993.

Theses, Dissertations, and Monographs

Romjue, John L. *From Active Defense to AirLand Battle: The Development of Army Doctrine 1973-1982.* TRADOC Historical Monograph Series. Fort Monroe, VA: Historical Office, HQ TRADOC, 1984.

Skelton, John D. "The Forbidden Weapon--The Employment of Army Tactical Nuclear Weapons." Monograph, U.S. Army School of Advanced Military Studies, 1991.

Stewart, James W. "The U.S. Army's Search for Relevancy in the Nuclear Age." Diss. Southwest Missouri State Univ., 1992.

Vokac, Robert H. "Smart Weapons--Can We Fold the Nuclear Umbrella?" Monograph, U.S. Army School for Advanced Military Studies, 1991.

Interviews and Remarks

Face-to-face interview by author
Michael Burke and R. H. Berlin, School of Advanced Military Studies, USACGSC, Fort Leavenworth, KS, April 1994

Remarks made at the Nuclear Research and Operations Officer Course, Kirtland AFB, NM, June 1993
Gary Pettit

Telephonic interviews by author
Edward Bondzeleski, coordinating author for "Joint Pub 3-12.1, Joint Nonstrategic Nuclear Weapons Employment," Offutt AFB, NB, November 1993
Max DeSosa of the Air, Land, Sea Agency, Lanley, VA, February 1994
Grover Ford of the U.S. Army Nuclear and Chemical Agency, Fort Belvoir, VA, November 1993

Telephonic interviews by author (continued)
Robert Goundry of Joint and Combined Branch, Warfighter Division, Fort Sill, OK, January 1994
William Siegert, Office of the Deputy Chief of Staff for Operations, U.S. Army, The Pentagon, November 1993
Daniel H. Thomas of the Directorate of Training, Combined Arms Department, U.S. Army Chemical School, Fort McClellan, AL, April 1994

INITIAL DISTRIBUTION

1. Combined Arms Research Library
   U.S. Army Command and General Staff College
   Fort Leavenworth, KS 66027-6900

2. Defense Technical Information Center
   Cameron Station
   Alexandria, VA 22314

3. MAJ Harold E. Dotson
   Department of Sustainment and Resourcing Operations
   USACGSC
   Fort Leavenworth, KS 66027-6900

4. LTC Herbert F. Merrick, Jr.
   Department of Joint and Combined Operations
   USACGSC
   Fort Leavenworth, KS 66027-6900

5. David E. Turek
   Concepts and Doctrine Division
   USACGSC
   Fort Leavenworth, KS 66027-6900

6. COL Jerry W. Warner
   14 Rainbow Lane
   Alexandria, KY 41001

7. Richard H. Wright
   Concepts and Doctrine Division
   USACGSC
   Fort Leavenworth, KS 66027-6900

CERTIFICATION FOR MMAS DISTRIBUTION STATEMENT

1. Certification Date: 05/04/94

2. Thesis Author: Major Michael E. Donovan

3. Thesis Title: Non-Strategic Nuclear Targeting in a Non-Nuclear Army

4. Thesis Committee Members Signatures:

5. Distribution Statement: See distribution statements A-X on reverse, then circle appropriate distribution statement letter code below:

(A) B C D E F X SEE EXPLANATION OF CODES ON REVERSE

If your thesis does not fit into any of the above categories or is classified, you must coordinate with the classified section at CARL.

6. Justification: Justification is required for any distribution other than described in Distribution Statement A. All or part of a thesis may justify distribution limitation. See limitation justification statements 1-10 on reverse, then list, below, the statement(s) that applies (apply) to your thesis and corresponding chapters/sections and pages. Follow sample format shown below:

S A M P L E	Limitation Justification Statement	Chapter/Section	Page(s)	S A M P L E
SAMPLE	Direct Military Support (10)	Chapter 3	12	SAMPLE
SAMPLE	Critical Technology (3)	Sect. 4	31	SAMPLE
SAMPLE	Administrative Operational Use (7)	Chapter 2	13-32	SAMPLE

Fill in limitation justification for your thesis below:

Limitation Justification Statement	Chapter/Section	Page(s)

7. MMAS Thesis Author's Signature:

STATEMENT A: Approved for public release; distribution is unlimited. (Documents with this statement may be made available or sold to the general public and foreign nationals).

STATEMENT B: Distribution authorized to U.S. Government agencies only (insert reason and date ON REVERSE OF THIS FORM). Currently used reasons for imposing this statement include the following:

1. Foreign Government Information. Protection of foreign information.

2. Proprietary Information. Protection of proprietary information not owned by the U.S. Government.

3. Critical Technology. Protection and control of critical technology including technical data with potential military application.

4. Test and Evaluation. Protection of test and evaluation of commercial production or military hardware.

5. Contractor Performance Evaluation. Protection of information involving contractor performance evaluation.

6. Premature Dissemination. Protection of information involving systems or hardware from premature dissemination.

7. Administrative/Operational Use. Protection of information restricted to official use or for administrative or operational purposes.

8. Software Documentation. Protection of software documentation - release only in accordance with the provisions of DoD Instruction 7930.2.

9. Specific Authority. Protection of information required by a specific authority.

10. Direct Military Support. To protect export-controlled technical data of such military significance that release for purposes other than direct support of DoD-approved activities may jeopardize a U.S. military advantage.

STATEMENT C: Distribution authorized to U.S. Government agencies and their contractors: (REASON AND DATE). Currently most used reasons are 1, 3, 7, 8, and 9 above.

STATEMENT D: Distribution authorized to DoD and U.S. DoD contractors only; (REASON AND DATE). Currently most used reasons are 1, 3, 7, 8, and 9 above.

STATEMENT E: Distribution authorized to DoD only; (REASON AND DATE). Currently most used reasons are 1, 2, 3, 4, 5, 6, 7, 8, 9, and 10.

STATEMENT F: Further dissemination only as directed by (controlling DoD office and date), or higher DoD authority. Used when the DoD originator determines that information is subject to special dissemination limitation specified by paragraph 4-505, DoD 5200.1-R.

STATEMENT X: Distribution authorized to U.S. Government agencies and private individuals of enterprises eligible to obtain export-controlled technical data in accordance with DoD Directive 5230.25; (date). Controlling DoD office is (insert).